WHOLESALER'S SALESMAN

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To .....

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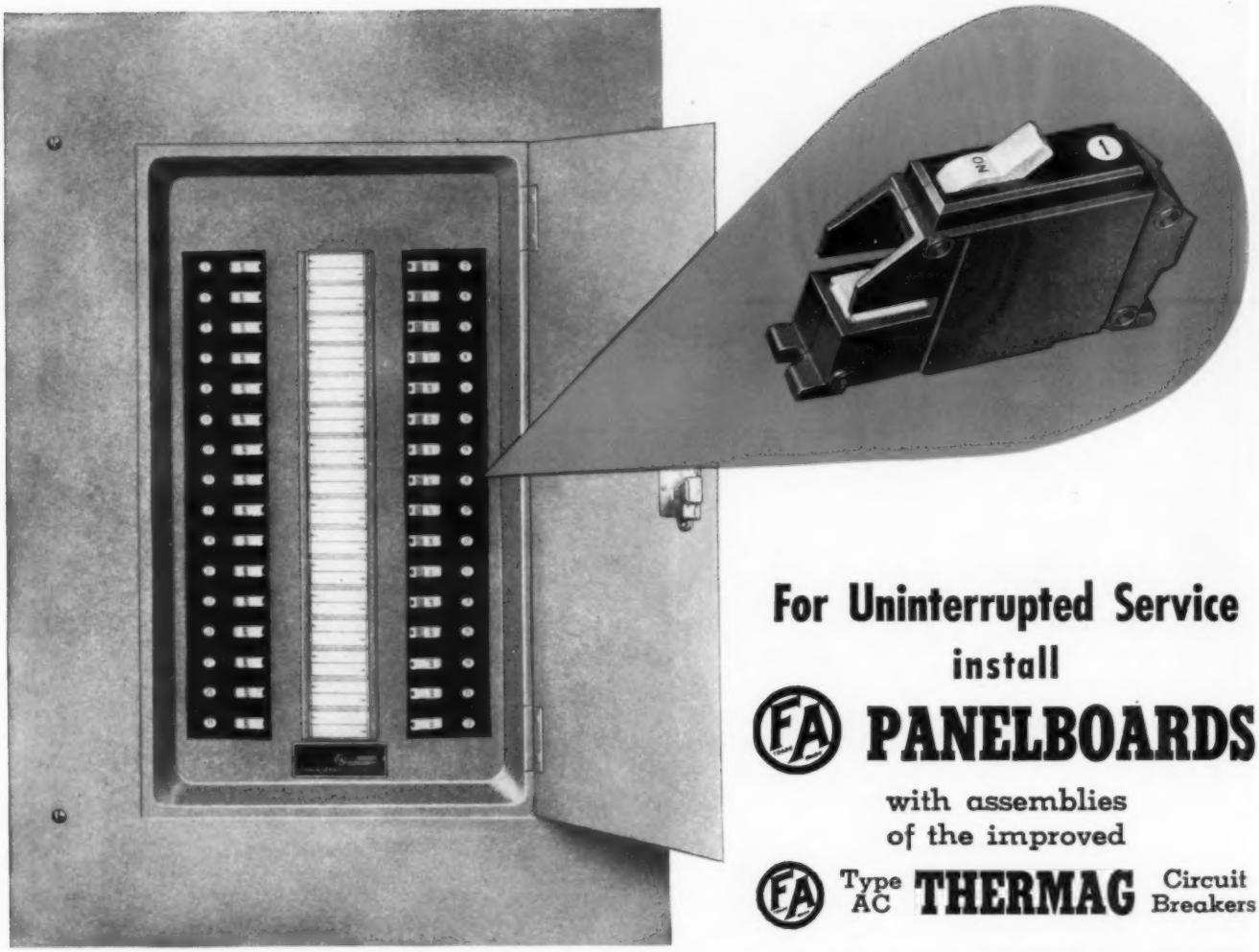


For Uninterrupted Service install

FA PANELBOARDS

with assemblies of the improved

FA Type AC THERMAG Circuit Breakers

The Safety Panelboard above is Catalog No. FA NAC1B32-3L20. It contains 32 FA Type AC Thermag Circuit Breakers, and 200 ampere 3 wire main connection. An enlarged view of the individual Circuit Breaker is shown at the right.

They not only provide full protection against short circuits and dangerous overloads, *but prevent unnecessary interruptions in service* due to momentary or slight overloads.

The combination of the time-tried THERmal trip with the new MAGnetic trip, in the individual circuit breakers, assures this double protection. On harmless, momentary overload the time lag characteristics of the thermal element prevent interruption of service, but trip on sustained, harmful overload. On short circuit, the magnetic element causes *faster* tripping.

When tripped, the handle of the single pole breaker automatically returns to the OFF position, thus indicating the circuit affected. On the double pole breaker, a red signal button is protruded from the face of the breaker on which the trouble has occurred.

Write for BULLETIN 69

Especially prepared for the use of Architects, Engineers and Contractors, it contains a mine of useable information on panelboards and cabinets. It is a real aid in planning and engineering electric distribution installations for light, heat and power. Write for your copy . . . Frank Adam Electric Co., St. Louis, Mo.

FA PANELBOARDS—THERMAG EQUIPPED

are made in Standard Type, Narrow Column Type, and Dust-tight Type construction. They are available with from 4 to 42 circuits, for either flush or surface mounting . . . Capacities: 50 amperes or less, 120 volts AC, single or double pole, individual trip . . . Approved by Underwriters' Laboratories, Inc.

Installation and connection are facilitated by new and improved FA Pressure Connectors. Ample knockouts are provided in the steel boxes. Fronts are bonderited, to prevent rusting, and finished in pearl gray lacquer.

EST. 1891 — THE SIGN OF A FA BETTER JOB

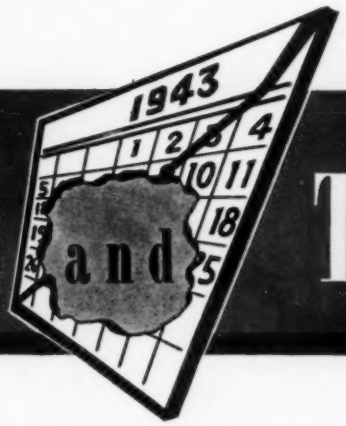
Frank Adam

ELECTRICAL PRODUCTS

for War Industry

FRANK ADAM ELECTRIC CO.
ST. LOUIS, MO. U.S.A.

TIMES and TRENDS



Don't Just Look For Smokestacks—Also Look For Cows!

Yep—that's just what we mean, c-o-w-s; those mild-mannered, sad-eyed food factories that you can see walking around in the pastures and barnyards of any rural area.

It seems the Department of Agriculture decided some time ago that electric service should be made available to livestock, dairy and poultry farmers, who under previous regulations were not able to get service connections.

Eligibility had to be measured by some common standard and that's where the cow comes in. Those DA experts decided that a farmer had to have at least 10 animal "units" in order to qualify as an essential contributor to our food production program and—the humble cow was adopted as the basic "unit".

One cow draws 100 feet of wire for that electric service connection. Similarly three breed sows or seventy-five laying hens or thirty breeding ewes, or 600 broilers would constitute one "unit" in those calculations, and a farmer must have at least ten of those food producing "units", to qualify for getting hooked up to the line.

There's your tip, boys. Look for sheep or cows, hens or sows and—presto! You know that if they total up to 10 "units" or more there's an order plus a job waiting for you to hand to your favorite contractor—unless it's a "co-op" in which event your strategy will have to be different.

★

That's "Holding The Line"

The Secretary of Labor announces that the Labor Department's own Bureau of Labor Statistics reports, that the Cost-of-Living Index DECLINED by 0.2 percent during June and points out that this was the first decline registered in 2½ years.

Also interesting is The National Industrial Conference Board's statement that for the first time in our history the hourly earnings of workers in 25 typical industrial plants averaged in excess of $1 per hour, having increased consistently for 34 consecutive months.

Of course, neither of these reports will be used by labor leaders. Incidentally, why is it sabotage to wilfully incapacitate a milling machine or lathe during wartime while labor leaders are allowed to wilfully cripple production even more effectively by calling strikes.

★

Cash Now—Credit Later

Retail sales in 1942 were the highest in the history of the country, totaled $56,200,000,000, were four percent above 1941 and twenty-three percent above 1940.

And the American people planked down cold cash to the tune of $41,100,000,000 in making those purchases, bought only $15,100,000,000 on credit or on time. In fact credit purchases showed a decline of 22 percent from the previous year, which leads us to remark that this augurs well for the future of appliance merchandising.

With few new radios, appliances, air conditioning units, automobiles available our workers are spending their cash on the things they can buy now. They are building up their tangible "assets", while at the same time improving their "cash position" through the buying of war bonds, savings accounts, etc. They will be good credit risks when the time is here when they can again obtain the major items like appliances, radios, television sets, automobiles, that they want now but now can't buy.

★

More Big Figures

From the Urban Land Institute, Washington, D. C., springs a $50,000,000,000 plan for the rebuilding of American cities after the war.

The plan was incorporated in the "Neighborhood Development" bill, recently introduced in Congress by

(*Continued on page* 15)

"-more planes than all

Speed on Sub-Assembly

At every step in plane production, from plans to final "gas and go," "See-ability," through better lighting, helps save time and materials.

(*Continued from page* 11)

Senator Robert F. Wagner, and provides for government-financed purchase by municipalities of "blighted or deteriorated" areas. These would be cleared of all buildings and then resold to private investors for building projects that would have to meet the requirements of the local planning board.

Governors of all states and the Mayors of 400 cities have been supplied with full details of the plan and asked for their suggestions and support.

It seems, that even if the ambitious $50 billion objective is lowered to a reachable figure the plan has a place in the Nation's postwar picture.

★

Copper No single raw material has continued so definitely in the "critical" column as has copper, and with none is relief so far away.

Elaboration on the causes of the copper situation have no place here but we urge our readers to miss no opportunity for moving obsolete or scrap copper into scrap-dealer channels so it can be put back to work.

We realize that prices for scrap brass and copper are not attractive, in fact we believe that the price ceiling, on copper being as low as it is, definitely has retarded both, the production of new copper and the recovery of scrap.

Nevertheless, we are at war, and those who are in position to add to the scrap pile of a critical material such as copper, should do so at once, if for no other reason, then as a patriotic duty that must not be shirked.

★

Small Plants Activities to get war work into every plant that is working less than 66 percent of normal capacity are continuing unabated.

General R. W. Johnson, Chairman of the Smaller War Plants Corporation announces that the American Bankers Association and various State bankers' organizations have urged members to give special aid and cooperation to small plants.

General Johnson also announced a new booklet "Spreading the Work" which is available to any small plant that wants war work. He urges those interested to communicate with the nearest Regional or District office of the War Production Board.

★

Glimpse A recent statement by Paul L. Chamberlain of G. E.'s Electronic Department gives a glimpse into the future of radio and television, probably will cause those who are already—and justifiedly—bullish about the outlook, to jack up their estimates of potential set-sales.

Mr. Chamberlain says:

"What we do expect in the field of post-war broadcasting is the replacement by FM stations of many low-powered AM stations which are now handicapped by interference and inadequate signal strength. This probably will mean higher power and more clear channels for the remaining AM stations.

We expect television broadcasting to develop rapidly after the war, along with FM radio broadcasting. Manufacturing experience gained in the production of electronic equipment for war will undoubtedly result in lower-priced television receivers after the war and this, plus public demand, should accelerate the expansion of television service."

★

NEWA Now Spells A-C-T-I-O-N If there is doubt in any wholesalers mind that the 1943 model National Electrical Wholesalers Association is doing a fighting job to protect the interests of the industry, the following example should dispel all such doubts.

On July 20th we wrote Managing Director Charles G. Pyle, giving full details of complaints that had reached us from two different sources about the procurement office of one of the government agencies in a certain city. It was charged that there was discrimination, not only against wholesalers but even against manufacturers who maintained a policy of selling only through wholesalers.

This morning, July 26th, only six days later, (with a Saturday and Sunday in between) we have a full report from Mr. Pyle. Evidently he took the train for that large city the day after the complaint reached him and ran down the facts right on the ground. His report is highly satisfactory.

Our hat is off with our thanks.

That's A-C-T-I-O-N for you!

EDITOR

DAY-LINE FLUORESCENT FIXTURES

COUPLINGS CONVERT UNITS TO CONTINUOUS FIXTURES
STARTERS ACCESSIBLE WITHOUT DISTURBING LAMPS
REFLECTORS SNAP INTO POSITION...
PRESS SPRING CLIPS TO REMOVE
FLEXIBLE CHANNEL CLAMP
CHAIN HANGERS
FOR SURFACE OR SUSPENSION MOUNTING
CABLE CLAMP
COMPLETE OPERATION ON AND OFF, 5 SECONDS

New WAR MODELS

AVAILABLE • ADAPTABLE • DEPENDABLE

FOR 2-40 WATT
3-40 WATT, AND
2-100 WATT LAMPS

Die formed throughout—designed for rigid construction. See details of Day-Brite's exclusive features above.

Reflectors suspended at 4 points by spring type catches, and can be taken off and replaced in total time of 5 seconds...Two coats baked enamel—gray outside, SUPER-WHITE inside... Be sure to get further details. Call your Day-Brite engineering representative or write

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5424 Bulwer Ave. • St. Louis, Missouri

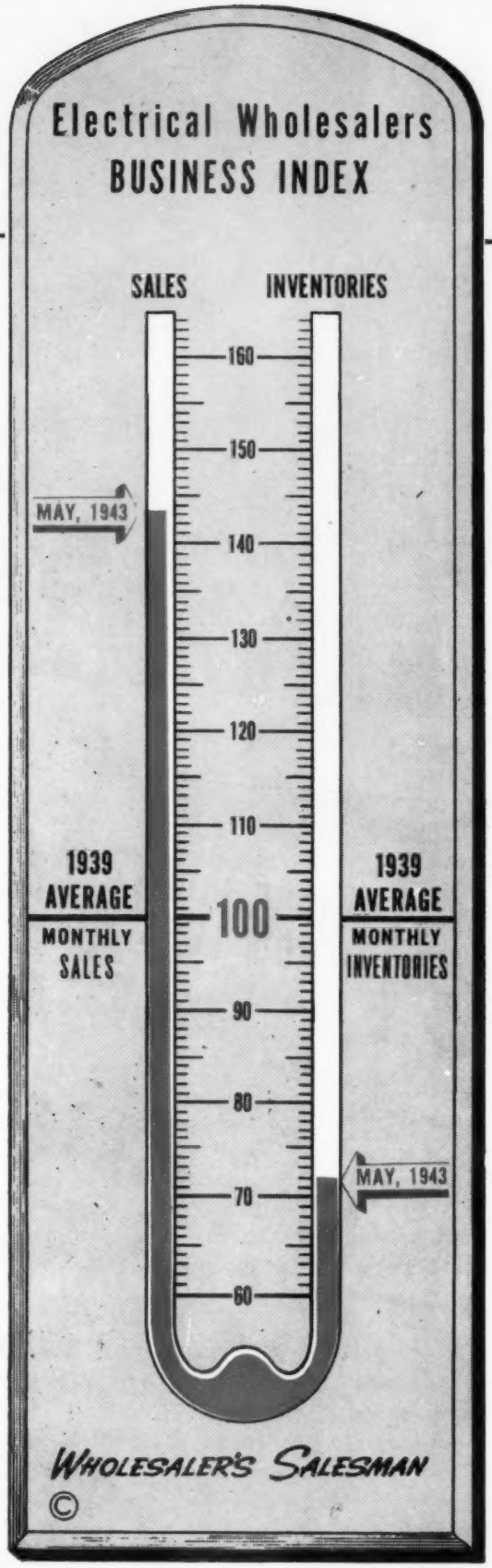
STURDY CONSTRUCTION
★
QUICK INSTALLATION
★
LOW COST MAINTENANCE

The DAY-LINE...CONTINUOUS provides a flexible method for installing long, unbroken lines of luminaires. Removable reflectors.

Day Brite
LIGHTING FIXTURES

99

The COMPLETE LINE OF FLUORESCENT LIGHTING FIXTURES *Nationally distributed through all leading electrical supply houses*



SOURCE The figures we use as basis for these monthly comparisons of performance in the electrical wholesaling field are collected and compiled by the Bureau of the Census of the U. S. Department of Commerce.

Business Index

For the Month of May, 1943

SALES The sale of electrical goods in May, as shown by the reports of 328 wholesalers, remained at the relatively high level of 143 percent of the 1939 average monthly sales. Although this is 8 points below the April average, it represents a sales volume still above the level in either January or February, higher than at least one month of "fabulous 'forty-one," and higher than any month of 1939 or 1940, except one.

A decline of sales in May, although unusual for that month, is quite understandable, because the three factors which in normal years would tend to build up sales in May today are war casualties. There's the fan business that would ordinarily increase business as the first hot days of May appeared. Then there would be a stepping-up in the movement of appliances as dealers stocked up to meet the anticipated June-bride and graduation-gift market. And, of course, the construction field would be showing activity with early summer building.

Without the help of these three seasonal sales builders, and with the war-born business remaining relatively steady, some decline was bound to show up in May.

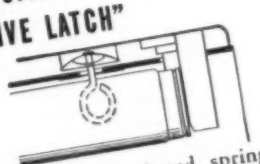
INVENTORIES The inventory situation in May was a case of "no gain is a good gain". The holding of inventories at the same level as April represents an encouraging halt to the month-to-month decrease in the size of wholesalers' stocks that has been reflected in these reports almost without let-up since December, 1941.

Apparently this holding of inventories at the level of the preceding month cannot be attributed wholly to the slight sales decline. Instead it seems probable that certain lines of products are moving into the stocks of wholesalers in larger volume.

COLLECTIONS Average collections, as reported by 305 electrical wholesalers throughout the country, were at 78 percent for May, the same percentage as for the previous month, and 5 points more than the collections reported for the same month of last year. The percentage change in accounts receivable for May was down 2 points compared with April and down 28 points compared with May, 1942.

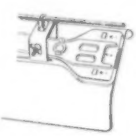
SYLVANIA *Challenges*

EXCLUSIVE "CAPTIVE LATCH"

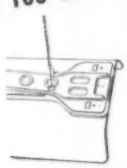


This Sylvania-developed spring-type fastener saves installation and maintenance man-hours. It stays put while lamp is in service despite any kind of vibration. It locks or unlocks with a simple quarter turn. No tools are necessary.

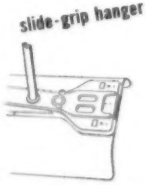
HANG IT ANY WAY YOU WANT



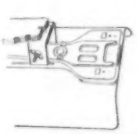
slide-grip hanger



chain mounting

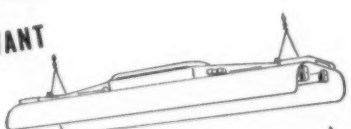


stem mounting

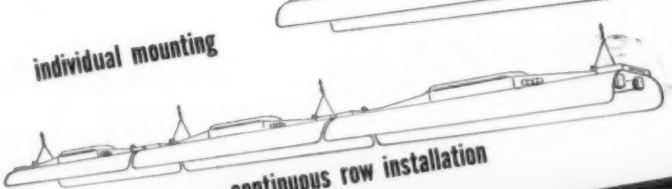


surface mounting

AND HOWEVER YOU WANT



individual mounting



continuous row installation

MORE LIGHT FROM LESS WEIGHT

Sylvania pioneered composition reflectors for fluorescent fixtures and "proved them in industry."

This composition reflector has an efficiency of 86 per cent — even higher than that of prewar porcelain-enameled metal in conventional contours.

It is fabricated to Sylvania's specifications from a strong and durable composition. Coated with MIRACOAT inside and a handsome French Gray outside, it stands up under extreme humidity and temperature conditions.

- ✓ Impervious to frequent washings.
- ✓ Gives more light.
- ✓ Lighter and easier to handle.

INCANDESCENT LAMPS, FLUORESCENT LAMPS, FIXTURES

The Fixture of the Future against the field

● Compare the design and construction of the Sylvania Fixture of the Future with any other fixture now available, and it wins hands down.

It is much more than a design to eliminate the metallic reflector and cut down top-housing weight to the three-pound requirement. Sylvania engineers attained a new standard of perfection, far ahead of its time.

A revelation of simplicity, this new Sylvania fixture is available in both 100-watt and 40-watt lamp size. In either length, *one* standard fixture fills any and all industrial lighting assignments.

Unparalleled in adaptability, it may be installed individually or in continuous rows. It is fitted with knock-outs for any practical mounting. The optional number of lamps in the regular 40-watt size gives new flexibility in meeting varying foot-candle requirements.

The streamlined top-housing, constructed like a cantilever bridge, encloses the ballast — protects it from dust — provides cooler performance. The starter sockets are honestly accessible — inset from the side to avoid dust, dirt and moisture. Pull-chain switch is optional.

The Sylvania Fixture of the Future carries Underwriters' Laboratories approval and our own standard guarantee. For specifications and prices, write Dept. WS-8, Sylvania, Ipswich, Mass.

"Everything that's Finest in Fluorescent"

★ ★ **SYLVANIA ELECTRIC PRODUCTS INC.**

LIGHTING DIVISION, IPSWICH, MASS.

RE AND ACCESSORIES, RADIO TUBES, ELECTRONIC DEVICES

WHOLESALER'S SALESMAN BUSINESS INDEX

REGIONAL ANALYSIS

MAY 1943

SALES of electrical goods by regions in May showed a somewhat more even balance than was evident in the reports of the previous month.

Among the various industrial regions sales did not seem to follow any well-defined trend. Instead they apparently reacted to localized factors. For example: the Middle Atlantic states showed up well with only a 3 percent drop in sales, while the adjacent New England group and the distant Pacific Coast region reported declines unusual for them; and the industrialized West North Central states experienced a 22 percent drop in May compared with April.

However, a pattern seems to be evident in the general decline reported from the agricultural and non-industrial states. In April each of these regions registered healthy gains that could be attributed partially at least to a spurt of business in rural areas.

It is worth noting now that the decline in sales in the agricultural regions may soon be arrested, and may possibly be followed by a noticeable increase in volume. This will depend on how much business will come to the electrical wholesalers as a result of the WPB order which sets aside a quantity of essential materials for non-rated farm orders. July and August should be the first months to react to this business.

A rather even geographical distribution of the goods flowing from manufacturer to wholesaler is indicated by the regional inventory reports this month. However, there are some points worth mentioning.

The holding of inventories at the level of the preceding month would be most likely the result of a small increase in the volume of goods reaching wholesalers, rather than be due wholly to the decline in sales. Evidence for that assumption is that several regions show no relation between the two factors. Regions 8 and 9, for instance, where inventories remained at 100 percent of April, had sales figures that showed less decline than most regions.

For the first time in several months, Region 5 did not show an unusual increase in inventories and thus lost top place to No. 6. The latter showed a startling recovery in May by reporting stocks at 107 percent of the April level, after showing in the April index the lowest month-to-month inventory level.

Figures in this table apply to the geographic divisions as outlined and numbered in red ink on map above

SALES MAY, 1943 Compared in % with		Region (See Map)	INVENTORIES MAY, 1943 Compared in % with	
April 1943	May 1942		April 1943	May 1942
92	80	1	103	46
97	89	2	93	45
91	68	3	99	48
78	58	4	99	41
86	67	5	99	55
86	62	6	107	44
82	75	7	102	38
93	85	8	100	38
91	83	9	100	51
91	**76**	For **U. S. A.**	**99**	**47**

Management
—Heart of America's Industrial Progress

In Peace and War, Management Men and Methods Steer Production on a Steady Upward Course

WHEN the Allied armada of 2,000 ships, protected by a vast umbrella of planes, struck the coast of Sicily, Axis leaders once more had reason to wonder how "that decadent, pleasure-loving America" had swung from the manufacture of automobiles, refrigerators and costume jewelry to equipments of war, and had out-produced such mighty plants as the Krupp, the Fiat and the Skoda works — and had done it so quickly.

America at war is in the lead just as it has led a world at peace. Super-performing planes are taking to the air at the present rate of nearly 100,000 per year. Ships, to carry the war to our enemies, slide down the ways at the rate of two a day. Tanks, trucks, guns, ammunition are pouring out of our "peace" plants in far greater volume than the entire Axis effort can possibly equal. War expenditures in 1943 alone will reach the staggering figure of approximately $83,000,000,000 — an amount equal to our entire national income for 1929. Added to this is the rock-bottom output of essential civilian goods — a very considerable item.

This unprecedented production is taking place while some 9,000,000 men and women, those physically best equipped, have been called to the armed forces. Many of them were taken from industry, and their loss could be repaired only by more efficient equipment and more effective methods.

Rigorous training programs had to be superimposed upon many other abnormal problems facing industry in its high-speed conversion from stoves to boats; from printing machines to guns; from automobiles to airplane engines; from fishing tackle to bomb sights.

This phenomenal task was further complicated by the need for rapid expansion. A modest machine tool industry had to be expanded to handle a volume many times its normal capacity. Steel production had to be increased by 20%, and that of aluminum and magnesium multiplied over and over. From almost nil, the demand for high octane gasoline soared to unbelievable quantities. The creation of synthetic rubber and electronic industries was necessary almost overnight.

Who deserves credit for these accomplishments? All industry! The engineers, chemists, designers, skilled workers, common laborers. But over and above all it belongs to *management*.

In industry it is mandatory to have a directive force to co-ordinate the efforts of men in the use of materials and the application of power toward the production of goods and services. The application of this directive force is the function of management, and only because we had today's kind of management were we able to transform ourselves, almost overnight, from a peace-loving nation to the world's greatest producer of implements of war. As a nation, we had been preparing for a long time to play our part in world affairs. This preparation, certainly not planned for today's objectives but none the less effective, began some four decades ago.

With the advent of the twentieth century, the character of industry in the United States, and, therefore, the character of American living, began to change. Scientific management was born. Frederick W. Taylor brought into focus and showed how to use effectively those processes and procedures upon which our present-day mass production is based. He was followed by Harrington Emerson, who made the industrial world acquainted with efficiency in manufacture and the remarkable progress to be gained therefrom in the field of production, with its consequent price reductions and wider distribution of industry's products. There followed, in industry, an alert management, a capable management, a management with vision. Without it, the work of Taylor and Emerson would have gone for naught.

It is because of this early work of management — and the extraordinary developments it produced — that the country as a whole, and particularly those employed in industry, were not over-awed by the seemingly impossible job of quick conversion to all-out war production. But let us look back four decades and examine some of those preparatory accomplishments which have proven so vital to the progress and welfare of the nation.

From 1900 to 1939 (the last pre-war year), total employment of all kinds increased 52 per cent; in the manufacturing industries alone the increase was 84 per cent. *The nation became definitely industrial.*

In 1900 the average wage earner was able to spend only 20.2 per cent of his income for things other than necessities; in 1930 his buying power for non-essentials had increased to 34.8 per cent. *The average man acquired confidence in what industry could do.*

In 1900 the average work week was 56 hours; in 1930 it was 48 hours. *The burden of production was being transferred from man to machine.*

In 1939 the United States possessed 30 per cent of the world's railroads, 72 per cent of its automobiles, 49 per cent of its telephones. *The nation's production equipment had grown to formidable proportions.*

In 1939 nearly half of the families in the United States owned their own homes, 64 million individuals carried life insurance policies and 45 million had savings accounts. National income had increased 300 per cent from 1900 and during the same period the proportion of national income paid out in salaries and wages increased from 58 to 70 per cent. And in less than this period (1914–1939) the purchasing power of the wage rate increased by 60 per cent. *There had been evolved the kind of living for which men will work — and fight.*

Since 1900, factories increased their output of goods from $11,000,000,000 to $60,000,000,000 in 1939. This increase of nearly 450 per cent was accomplished while the country's population rose only 60 per cent. In this same span of years, technological developments and improvements in methods had

increased the value added by manufacture per wage earner by 200 per cent, and the horsepower per factory worker had been multiplied by 2½. *The nation's production plant was ready to assume its gigantic wartime job.*

During this period of industrial and national evolution, management itself had changed. Prior to the advent of scientific management, our goods and services were the product of several kinds of directive activities, varying from the strictly paternalistic to the ruthless. There was little conception of the responsibility that industry now broadly acknowledges — the responsibility of trusteeship in the interest of stockholders, employees and the public — specifically; in the interest of our national economy — generally. Acceptance of this stewardship is acceptance, also, of the belief that, in the long run, no industry, and no unit of industry, that does not serve society can live.

Have the actions of management caused the times to change? Or has an alert management been successful only because it has changed with the times? Certainly, the industrial concern of 1900 would not thrive under the conditions of today. Just as certainly the new things that industry has in store for a waiting postwar world will have a far-reaching effect upon the times.

Management today seldom owns the factory or the business it manages. It is hired to perform the coordinating, directive functions. It is free to change — of itself, or with the times. Management therefore exercises its power through leadership in executing ideas . . . not through ownership.

This is the fourteenth of a series of editorials appearing monthly in all McGraw-Hill publications, reaching more than one and one-half million readers. They are dedicated to the purpose of telling the part that each industry is playing in the war effort and of informing the public on the magnificent war-production accomplishments of America's industries.

Good management can be sustained only in an environment sympathetic to its aims. It has an undeniable obligation to society, because it must be a compatible part of the social structure or be rejected by that structure as a whole.

An environment sympathetic to its aims means, also, that industry, in the very serious reconstruction period ahead, will not be at full effectiveness if it is subjected to attacks by government no matter what the underlying reasons may be — over-zealous devotion to a cause, lack of understanding or just plain politics. It was to industry — to industrial management — that the government turned when our existence as a free nation was threatened; it is to industrial management that government must turn in order to win the peace.

This statement is made in the sincere conviction that what has made America strong is industry's ability to produce consistently more and more goods and services for more and more people. It is only by actually creating them that we built up our stockpiles of the necessities of life. And it is only by creating them that we can have more of those things that make life worth while. These become available to more people as industry succeeds in getting greater output of goods and services for a given input of human energy, materials and power.

And what of the physical jobs ahead? In this country alone, there will be an immense demand upon industry to supply the things people have been unable to purchase during the war. Today the nation is wearing out not only its automobiles, refrigerators, vacuum cleaners and radios, but its very houses, its roads, railroads, and airline equipment. It is saving its money while whetting its appetite. Truly, the calls the American people will make upon industry in the postwar period will be many and insistent.

This demand can be viewed in another light. Economists say there will be 56,000,000 persons seeking gainful employment after the war. The Committee for Economic Development has estimated that $140,000,000,000 worth of goods and services will be required each year for those people. Compare that with our actual output of $97,000,000,000 worth of goods and services in 1940 when gainful employment was 46,000,000.

These future jobs will be done if industry's management is not too much hampered by government management. Management in industry performs its function in the field of *doing* things. Management in government performs its function in the field of *regulating* things. The best cooperation of the two kinds of management will be necessary in the postwar period. Certainly, too much of the regulatory kind will interfere seriously with the kind that does things.

Industrial management must improve, too. If it is too selfish, if it does not recognize definitely the trusteeship inherent in its job, if it does not understand and live up to its social responsibilities, then it will be risking all for which we are fighting. The following suggestions are made to indicate the direction that management's self-improvement can take.

Evolution in management has been too slow in some respects. Management in industry has been too prone to see the advantages in technological development while being blind to its evils. Looking at industry and social progress as a whole, there can be no doubt as to the value of technological improvement. It creates jobs. It elevates the standard of living. But that economic fact is of no satisfaction to the individual who loses his job because a new machine or a new method required one less man. By and large, this is an evil that management can do something about.

Management has been too careless of its opportunities with regard to labor. On that account the pendulum of social readjustment has swung too far. Labor has been given extensive privilege without corresponding responsibility.

Industrial management has been too slow to abandon its policy of letting the buyer beware. As a result of this, industry today is over-regulated.

Management has been too slow in recognizing its responsibility to promote the economic philosophy that a society cannot have for consumption what it does not produce. A companion educational item too long neglected is management's obligation in the field of public relations.

In these years since 1900, industrial management has been growing. Perhaps many of its experiences have been but growing pains. Management has learned, among other things, the absolutely vital need for capital at the right time and in the right amount. It has learned to use some of its earnings as "seed-money" in the introduction of new products and the use of new processes. It has learned to invest more and more in research. It has learned of the interdependence of industry and agriculture. And it has learned much about the eternal triangle of industry, labor and government.

With such a history and such experiences behind it, I have every faith that management is going ahead to even more glorious accomplishments in the winning of the war, and I believe that its peacetime accomplishments to come are beyond the prediction of any of us — even management itself.

President, McGraw-Hill Publishing Company, Inc.

WHOLESALER'S SALESMAN NEWS

Advisory Committee Discusses Post-war Stocks, Appliances

Wholesaler advisory group in meeting with WPB officials finds chances for more appliances stymied by critical shortages. Asks orderly redistribution of government's stockpiles after war. Studies new WPB forms

AVAILABILITY of raw materials for non-military electrical items is not in sight at the present time, WPB officials told members of the Electrical Wholesale Distributors Advisory Committee at a recent meeting. The copper situation, particularly, is still tight, the committee was told. And, the officials from the Wholesale and Retail Trade Division indicated, any additional production which is realized will be used for direct war purposes.

The group considered the question of small household appliances. Insofar as electric fans are concerned, it was pointed out, the only production of these is now reserved for shipboard use on Navy and Maritime Commission vessels and that other stocks are being carefully allocated to the most essential uses, such as hospitals. In the discussion of the problem of maintenance of household electric irons the committee was urged to ask the industry to promote conservation of irons particularly in view of the heavy demands on commercial laundries.

The committee raised the question of redistribution of defense materials lying idle in various government projects and suggested that steps be taken to locate these materials and put them back into circulation. Members also asked that plans be made now for orderly disposal of government-owned electrical equipment where excess stocks develop, and emphasized that everything possible should be done to avoid a situation such as arose immediately after World War I when government stocks put on the market resulted in disruption of normal distribution machinery. The committee offered its cooperation in establishing adequate control over disposal of these stocks.

The group, which met during the last week in June, also discussed the situation which would arise the following week when, on June 30th, all rated orders for wire and cable would be invalid unless accompanied by an allotment of materials under the Controlled Materials Plan.

It was announced that CMP provides for procurement of certain warehouse replacement stocks which will not be affected by the June 30th cancellation date and which can be obtained without the use of allotment numbers. Directives had already been issued, the committee was told, to wire and cable manufacturers to set aside certain percentages of the production capacity for warehouse replacements.

Manpower problems in the industry were also reviewed, and a task committee previously set up reported that at the present time no clear-cut policy for handling the problem exists. Major manpower difficulty confronting the industry, members said, is the uncertainty of the status of remaining key employees. They declared that this de-

"CONSERVICE" TRAINING SCHOOL for electrical dealers on the Pacific Coast is started at Stockton, Calif., by Rudy Stamphar, service manager, and W. C. Miles, merchandising supervisor, of WESCO, San Francisco. They are standing in the rear with E. C. Watts, service manager of Westinghouse Electric and Manufacturing Co., San Francisco. A three-day program covers repair of refrigerators, ranges, water heaters, washers, ironers, etc.

CONDUIT FITTINGS THAT HELP YOU WITH

Your WARTIME JOB

Helping distribute essential war-time materials with speed and efficiency is one of *your* biggest jobs today. *Our* biggest job is to service your orders promptly and efficiently with quality products and at attractive prices that you, as a jobber, will appreciate.

REPRESENTATIVES
IN
PRINCIPAL CITIES

Conduit

PIPE PRODUCTS CO.
COLUMBUS, OHIO

PIPE COUPLINGS · PIPE NIPPLES · ELBOWS, 90° AND 45°
RUNNING THREAD PIPE · GOOSENECKS · WALLPLATES

rives from the fact that the industry has not thus far been given an essential classification. The question is to be discussed further with the Office of Civilian Requirements and the War Manpower Commission.

Wholesaler Heads WPB in Kansas City

W. B. Satterlee, president of the Columbian Electric Company, Kansas City, Mo., has been named to the position of director of the Kansas City regional office of the War Production Board. He was formerly district WPB manager for Western Missouri and Eastern Kansas.

Mr. Satterlee will have regional direction over WPB activities in the states of Missouri, Kansas, Arkansas and Nebraska.

WPB Issues Guide For Lighting, Wiring

Lighting specifications for construction or conversion projects now being designed should be checked with the "Design Guide for Interior Electric Lighting and Wiring for Wartime Construction" which was released recently by the Conservation Division of the War Production Board.

The guide explains WPB's conservation policy with respect to lighting and wiring. While it is not presented as an official order or directive, designers are expected to consult it to keep their specifications as nearly as possible within its standards.

Copies of the guide may be had from the Conservation Division, 11th and H Streets, N.W., Washington, D. C.

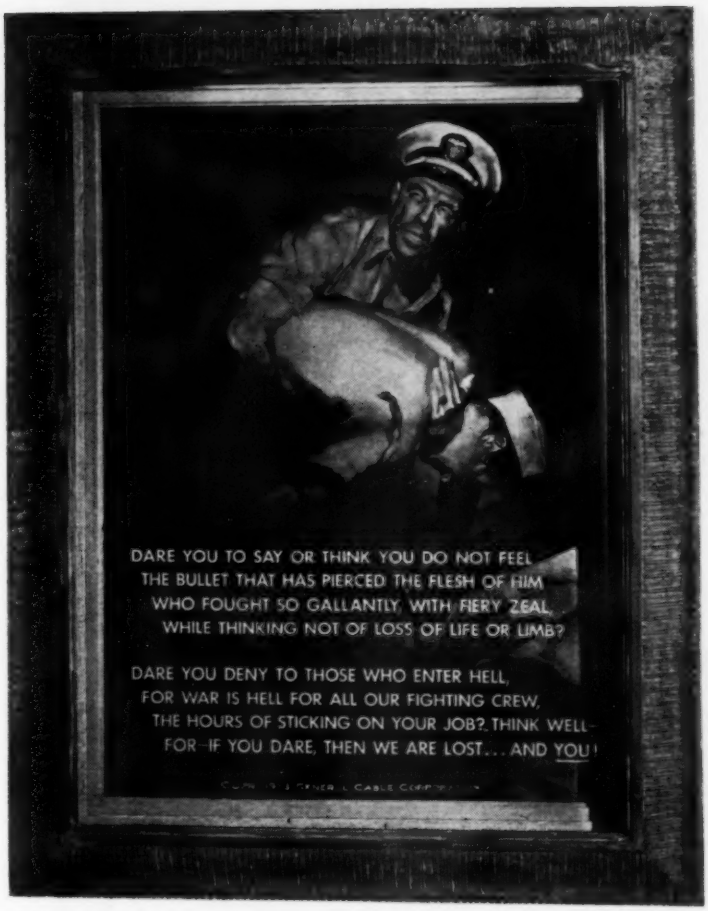
Urge Close Scrutiny Of All Questionnaires

Corrective measures regarding the issuance by Federal agencies of unauthorized questionnaires, the existence of which are putting an unwarranted burden on American business, were reiterated recently in a statement by the Advisory Committee on Government Questionnaires, in concurrence with the Bureau of the Budget.

With a few exceptions, requests for information, as defined by law, are subject to the review of the Bureau of the Budget and may not be issued by a Federal agency unless authorized by the Bureau. The Advisory Committee, concerned with the circulation of questionnaires which have not been authorized, advised businessmen to exercise more caution about those report forms that are suspect. "Inquiry should be made of the Advisory Committee, or of the Bureau of the Budget as to whether a report form has been authorized," the Committee announcement said. "Whenever desired, no disclosure will be made of the person or organization making the inquiry."

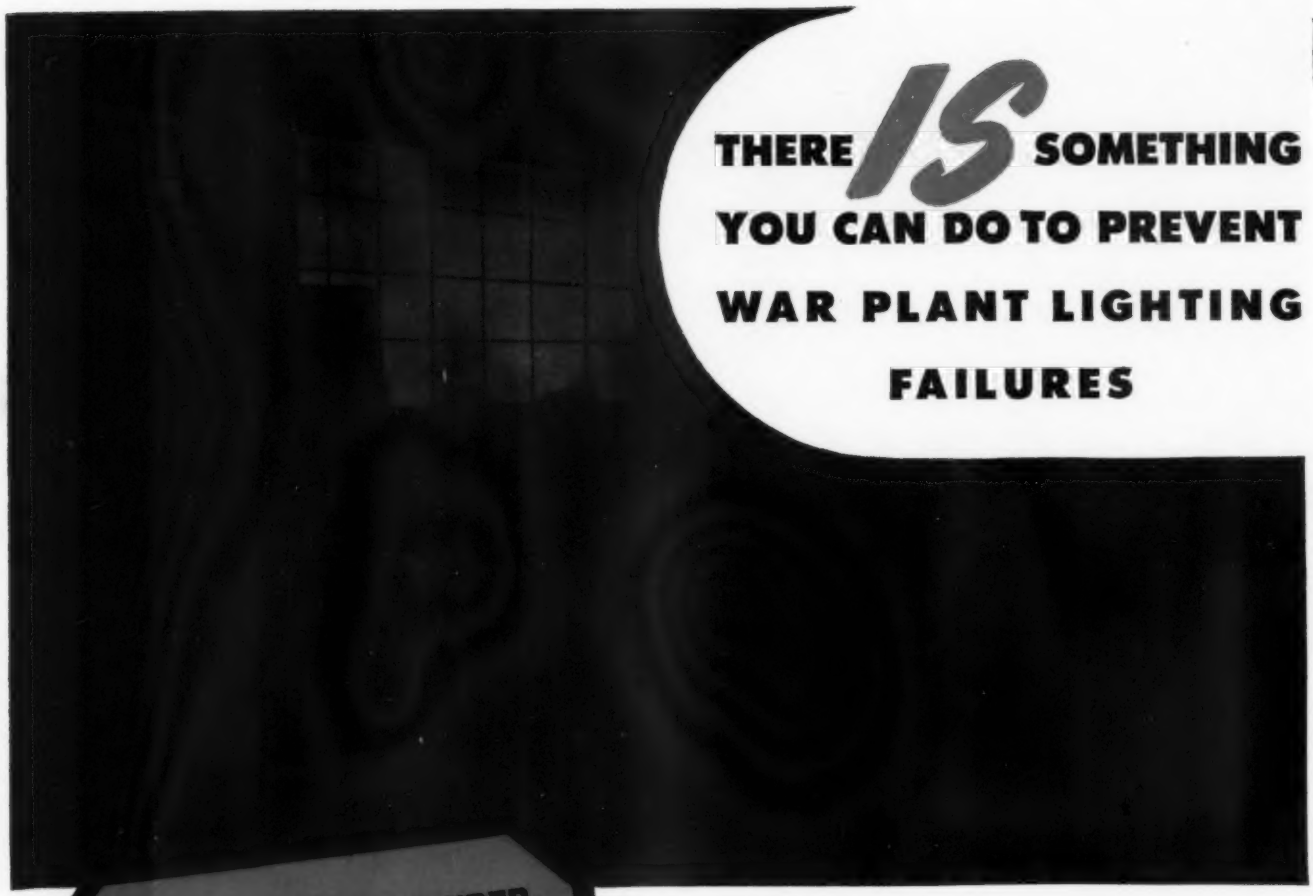
W. J. Donald, chairman of the Ad-

(*Continued on page 72*)


DARE YOU TO SAY OR THINK YOU DO NOT FEEL
THE BULLET THAT HAS PIERCED THE FLESH OF HIM
WHO FOUGHT SO GALLANTLY, WITH FIERY ZEAL,
WHILE THINKING NOT OF LOSS OF LIFE OR LIMB?
DARE YOU DENY TO THOSE WHO ENTER HELL,
FOR WAR IS HELL FOR ALL OUR FIGHTING CREW,
THE HOURS OF STICKING ON YOUR JOB? THINK WELL—
FOR—IF YOU DARE, THEN WE ARE LOST... AND YOU!

***WINNING TITLE** for this poster, which is one of a series General Cable Corporation is turning out, was written by William S. Porter, a worker in the company's Perth Amboy, N. J., plant. He was awarded a $100 war bond.*

***TACOMA, WASH., Graybar presents:** arm and shoulder, only, of salesman Earl Hoff; Marjory McDonell, stenographer; customer Ray Kelly, Electric Construction Company; "Pete" Rawlings, service clerk; J. G. Gillespie, service supervisor; and John Reine, local manager.*



THERE *IS* SOMETHING YOU CAN DO TO PREVENT WAR PLANT LIGHTING FAILURES

THE RLM LABEL HAS STOOD AS A SIGN OF QUALITY IN INDUSTRIAL LIGHTING REFLECTORS FOR MORE THAN 20 YEARS

● What would be the losses in war production if the lighting in your plant should fail? Production losses due to complete or partial blackouts result from many other causes than night air raids. Such "blackout" losses —which are as unnecessary as they are costly—result from (1) too little light for efficient seeing; (2) lighting that causes eyestrain and fatigue; (3) lighting equipment that fails under severe service.

To guard against such lighting failures, insist that the industrial lighting fixtures you install are engineered and built to RLM Specifications. You can be certain you are getting this insurance against "war production blackouts" if your industrial lighting units are certified by the RLM LABEL.

Industrial Lighting Fixtures made in accordance with RLM Specifications...and certified by the RLM LABEL...are designed and constructed with that extra safety factor so vital today. They also provide highest lighting efficiency, maximum power conservation, lowest maintenance cost. Their reflectors of pocelain enamel ...the most practical of all known reflecting surfaces for most industrial lighting purposes ... are unaffected by mechanical strains, smoke, fumes, grime, dust and atmospheric conditions ... are non-porous, easily cleaned, fadeproof, non-peeling and non-breakable. For full particulars write any manufacturer or distributor of RLM Industrial Lighting Units, or RLM Standards Institute.

The Letters RLM Stand for Reflector and Lighting Equipment Manufacturers

RLM STANDARDS INSTITUTE
INCORPORATED
307 N. MICHIGAN AVE. • SUITE 1600 • CHICAGO, ILL.

AIDS to Wartime Wiring

G-E DISTRIBUTORS OFFER G-E BRAIDX AND G-E SERVICE ENTRANCE CABLE

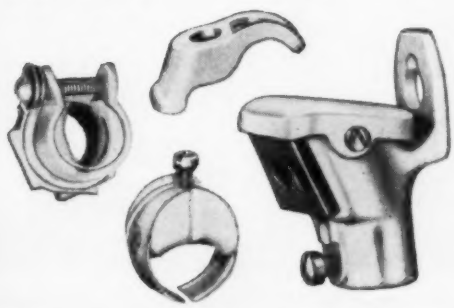
THESE two cables, handled by G-E Wiring Materials Distributors, meet customers' wartime wiring requirements. Both save steel for the war effort.

G-E BraidX Nonmetallic Sheathed Cable is suitable for factory wiring maintenance work . . . for factory rewiring . . . for new factory wiring. It is also well suited for war housing installations. G-E BraidX can be used in place of rigid conduit, EMT or BX wiring *except in hazardous or wet locations.*

G-E Service Entrance Cable is designed for use from the entrance cap to the meter equipment of war housing, barracks and other wartime structures. It can be installed on the outside of buildings without conduit protection.

These cables, of course, are only two of the many G-E Wiring Materials handled by G-E Distributors. General Electric Company, Appliance and Merchandise Department, Bridgeport, Connecticut.

G-E Electrical Fittings Handled by G-E Distributors



There are over 450 different fittings in the G-E line —all of them particularly suited for today's needs. Fittings are available for BraidX, service entrance cables, other types of cables and for all types of raceways. These fittings are well made and will give dependable service.

GENERAL ELECTRIC

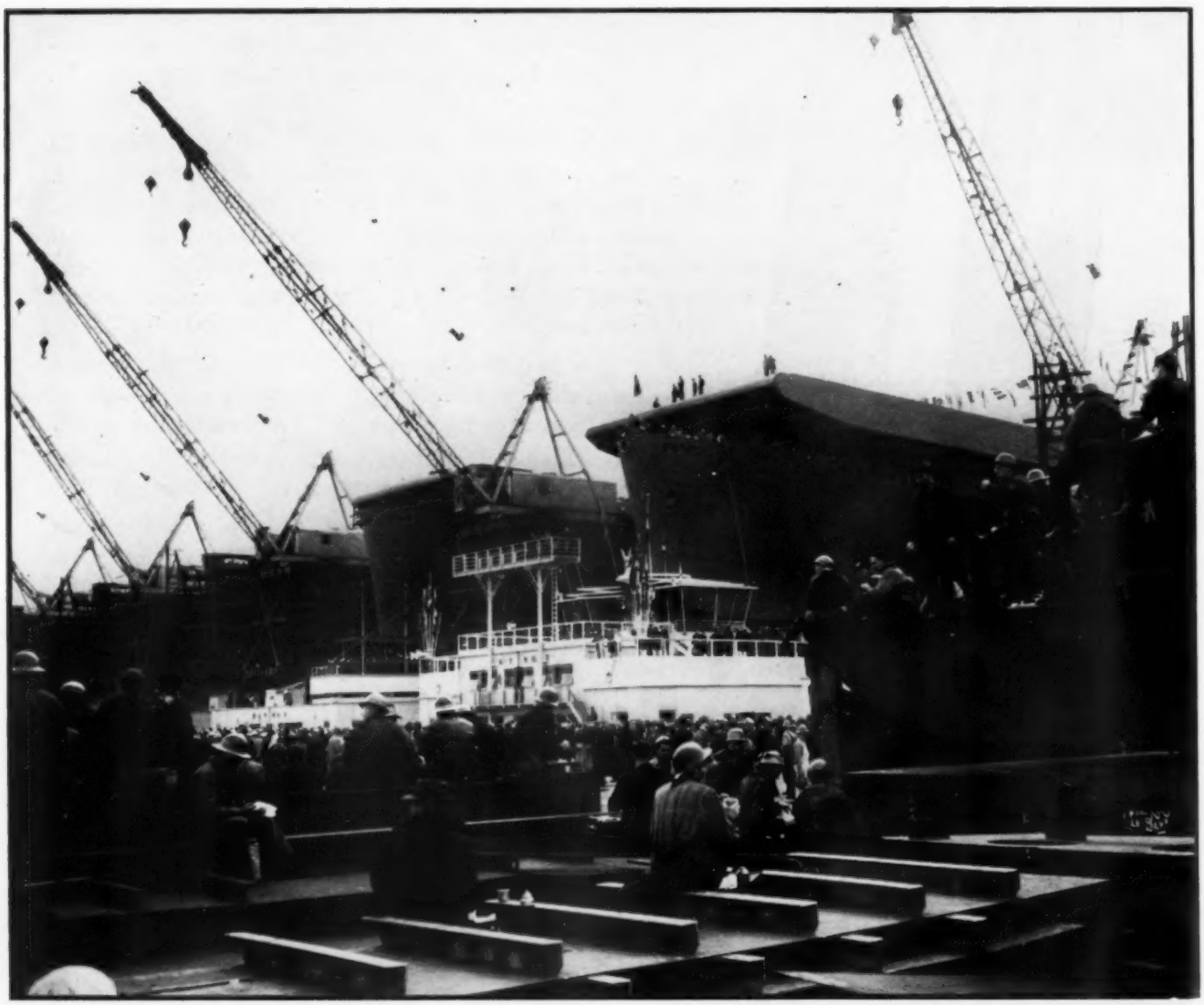
Miracle Shipbuilder Kaiser's

"We Need the Services

By Fred S. Lord

Manager of Purchases,
Kaiser Company, Inc.,
Portland—Vancouver

As told to Henry W. Young



Aircraft carriers now under construction at the Vancouver yard. However, three types of ships have been built at this yard since it started—there were some Liberty Ship freighters, tank landing craft, and these flat-tops.

Purchase Manager Says:

Of Electrical Wholesalers"

The author says to wholesalers: "Send us shipbuilders your best trained technical men."

IF variety is the spice of life, then the purchasing staff of the Vancouver, Wash., shipyard leads a more spicy existence than those of the other two Kaiser yards in the Portland-Vancouver district, which are those at St. Johns (Oregon Shipbuilding) and Swan Island both in Portland. Fred S. Lord, as manager of purchases of the Kaiser Company, Inc. in this district, has his headquarters at the Vancouver yard, but has supervision of purchases of all three. There are about eight buyers and forty to fifty people connected with purchases at each of the yards.

Seen at his office in Vancouver a few days before the launching of the first aircraft carrier built at that yard, Mr. Lord was kind enough to say a few words for publication in WHOLESALERS SALESMAN concerning the electrical wholesalers and their representatives who are instrumental in securing the electrical equipment and supplies and who, through their technical knowledge, have made themselves helpful in carrying out the shipbuilding program.

This twelve-way Vancouver yard has shown itself versatile in turning out various kinds of ships in fast, even record, time, and a word on that before quoting Mr. Lord direct. Construction of this yard got under way January 20, 1942. The site was a dairy farm and the entire 160-acre area was built up with an average of approximately 10 ft. of fill. The first keel (Liberty Ship) was laid April 15 and a second a few days later. It was some time after this before the yard as a whole was completed.

The first vessel was launched July 14. The elapsed time from keel laying to launching established a new record for a first ship out of a new yard. The second one went down the ways a few days later. But shortly after the keels of these two Liberties were laid, there was a change over to a new contract calling for the building of tank landing craft of a new design. Cutting through the problems inherent in change of design, the first of these new ships was laid on the ways June 15. Following the plan of prefabrication and assembly off the ways, for which the Kaiser yards are well known and which method has revolutionized shipbuilding, launching of all the ships called for on this contract was completed in 180 days. During this time, the famous 71½-hour hull was launched, and it was

GREAT NAMES in American Progress

ROBERT FULTON, BOAT BUILDER — On a fateful Friday in 1807, a skeptical crowd gathered at the foot of Cortlandt Street, New York. They came to watch "Fulton's Folly" attempt the "impossible" by traveling without sails from New York to Albany. Those who came to jeer stayed to cheer. "Crazy" Bob's puffing, snorting Clermont wheezed away from the jetty and grunted upstream against the wind at the miraculous speed of four miles an hour. On that day, Robert Fulton, well-nigh penniless dreamer, revolutionized the water-borne transportation of the world.

AMERICAN BLOWER

American Blower products have contributed much towards the progress of American industry — progress that today is making it possible for America's vital industries to outproduce the world. In the great public utilities, the steel industry, in the manufacture of petroleum products, chemicals, in food processing, mining, smelting and refining, in hospitals, schools, public buildings and homes, American Blower air handling equipment has kept pace with progress.

Utility Set

CONTRACTORS — DEALERS — We're working 100% for victory. But you can still buy American Blower products for vital war work. After victory we'll be ready with the most complete line of heating, ventilating and air handling equipment in history.

ARMY (E) NAVY

For excellence in production

AMERICAN BLOWER CORPORATION, DETROIT, MICHIGAN
CANADIAN SIROCCO COMPANY, LTD., WINDSOR, ONTARIO
Division of AMERICAN Radiator and Standard Sanitary Corporation

Scene at the launching of the first aircraft carrier to be built at the Vancouver shipyards. This is the "Alazon Bay," launched on April 5, 1943, and christened by Mrs. F. D. Roosevelt. Left to right: Bob Miller; M. Miller, assistant general manager of Kaiser's Vancouver yard; Henry J. Kaiser; Eleanor Roosevelt, Thomas M. Woodward, commissioner, U. S. Maritime Commission.

not just a "stunt" since all other work went on as usual during the period.

Prior to completion of the landing craft contract, construction of aircraft carriers was begun and also an interim contract for eight more Liberty Ships taken, so that at one time there were three different types of ships on the ways and under construction at the same time. All of this series of aircraft carriers are to be named after bays and the first, the Alazon Bay, was launched recently, being christened by Mrs. Eleanor Roosevelt.

"Electrical maintenance supplies and ship equipment electrical supplies used at the Vancouver Yard are bought through distributors and wholesalers on the Pacific Coast," said Mr. Lord. "There are four main reasons why this is advisable.

"(1) These wholesalers maintain stocks which can be drawn upon for the smaller quantities needed for repair and maintenance work.

"(2) They are close by as compared with eastern stocks, which expedites deliveries of larger orders because it is possible to keep in closer contact with them.

"(3) The wholesaler has the facilities and connections to enable him to do the expediting. He is the one who follows through and sees that the orders are delivered on time. This saves the yard much book work and checking.

"(4) Now, most electrical wholesalers in this district have marine departments set up to enable them to give service. This is important because marine electrical equipment is highly specialized and requires a thorough knowledge of the products as regards both installation and operation.

"Also, the wholesaler, because of his knowledge of electrical products and the manufacturing field generally is in the best position to know what substitutions may be made when necessary. At the same time, he is in contact and working in cooperation with the various governmental approval agencies and can get the necessary approval for such substitutions with the minimum of delay.

"The wholesalers' representatives must know their substitutions. We in the purchasing department are more or less blind in that respect. We cannot know all the technicalities involved and must perforce depend upon these representatives to make the suggestions as regards substitutes and explain them to the production department.

"The electrical end of ship building and fitting presents more problems to the purchasing department than do most others," Mr. Lord continued. "This is because of its highly technical nature. Therefore, a trained electrical man or engineer on the staff of the wholesaler, who is thoroughly familiar with marine electrical equipment and requirements is of great help to us here. The majority of electrical wholesalers' men who call on us are technically trained. Some are not, however, and they are at a disadvantage.

"I would say that if there were any plea to make to wholesalers to improve their service it would be: 'Send us more technical men!' We either take the instructions or suggestions they have to offer in this office, or, if necessary, we put them in contact with the engineers or production men involved.

"As to the number of calls made here, I think if the representative makes routine calls about twice a week that should be sufficient to enable him to keep abreast of things, conserving both his time and ours. Then, of course, he should be available in case of emergency should we find it necessary to locate him through his office."

GRAYBAR Shows How When a Wholesaler is

SOMETIME ago the mail brought us the two Graybar Electric Company's booklets entitled "Streamlined for War" and "How the War is Making a New Man of Your Graybar Representative."

We studied the two presentations with special interest because we had found out long ago that whatever comes out of our friend Ken Hopkins' shop is generally "right down the alley" for the entire electrical wholesaling industry, and once more we were 100 percent right.

The subject matter of the two booklets was so timely, and the method which had been employed to put punch into facts was so highly effective that in the first flush of enthusiasm we had the impulse to try for permission to reproduce the two booklets in full for general distribution to all wholesalers. However, on second thought, we realized that such permission should not even be asked because, after all, those booklets were created to build good-will and prestige for Graybar and could not properly be used by other wholesalers who operate in competition with Graybar.

So, after a compromise, we wrote Friend Hopkins for permission to use some of the material contained in those booklets as the basis for a feature presentation in WHOLESALER'S SALESMAN and—as is customary with every Graybar man, when the good of the industry is involved, "Ken" came through in fine form, sending us the letter of permission reproduced herewith.

We thank the Graybar Electric Co., Inc., and Ken Hopkins, its Advertising and Sales Promotion Manager, most sincerely for having granted the permission which made it possible to present this extremely valuable material to our readers.

We believe that every electrical wholesaler, every salesman, counterman, stock clerk, purchasing agent, expediter, etc., who reads this will gain greater pride in the work he is doing and inspiration to intensify his future personal effort toward the winning of the war.

O. Fred. Rost
Editor.

TIME IS SAVED

when a wholesaler is streamlined for war

Stocks Take Up Time Lag

Graybar's warehouse stocks in 86 conveniently located warehouses (to serve the nation) saved from 4 to 6 months' lag between manufacturer and user. This saving of time took place at the beginning of the war effort when the government and war industry were getting ready to do the job. Camps, cantonments, navy yards and all kinds of war plants secured the electrical materials needed to start operations right from Graybar's stocks.

Trained Procurement Advisors

From the earliest days of our defense job to today in our war job, the expert services of Graybar's trained procurement advisors (prior to the war effort these men were salesmen) are saving time for every branch of our armed services and for war industry. Their knowledge of where and how to get most quickly the needed electrical supplies, their knowledge of just what is needed and what to substitute for unavailable items, is saving time so that the United Nations may hit the enemy early and often.

Expeditors

The thousands of Army, Navy and Marine expeditors and those employed by war industry are a startling example of today's procurement difficulties. When Graybar is given a war order, we accept it as a grave responsibility and do our own expediting. Who can be better fitted to expedite electrical supply and equipment orders than Graybar men and women trained through years of experience as distributors of 200 leading electrical manufacturers? Hours, days, weeks and months have been saved for the armed services and for war industry by Graybar's expediting work.

Trained Service People

Many years of planned training in the receiving, warehousing, selecting, packing and shipping of electrical supplies and equipment, and in handling orders, priorities and all the details of paper work, have prepared Graybar service men in every location to help speed the necessary materials for victory. Experience has taught us many short cuts which are used daily to speed up every Graybar war order.

Avoiding Production Shutdowns

Many, many plant shutdowns in war industry (including aviation and shipbuilding), naval construction and army activities, have been avoided by immediate service from Graybar's stocks. This is almost a daily occurrence, and though we

War Activities Are Speeded Up
STREAMLINED FOR WAR

have wholeheartedly cooperated 100 percent with the Government's stock control plans, we are still able to efficiently perform this vital form of time saving.

Smooth Handling Of Complicated Orders

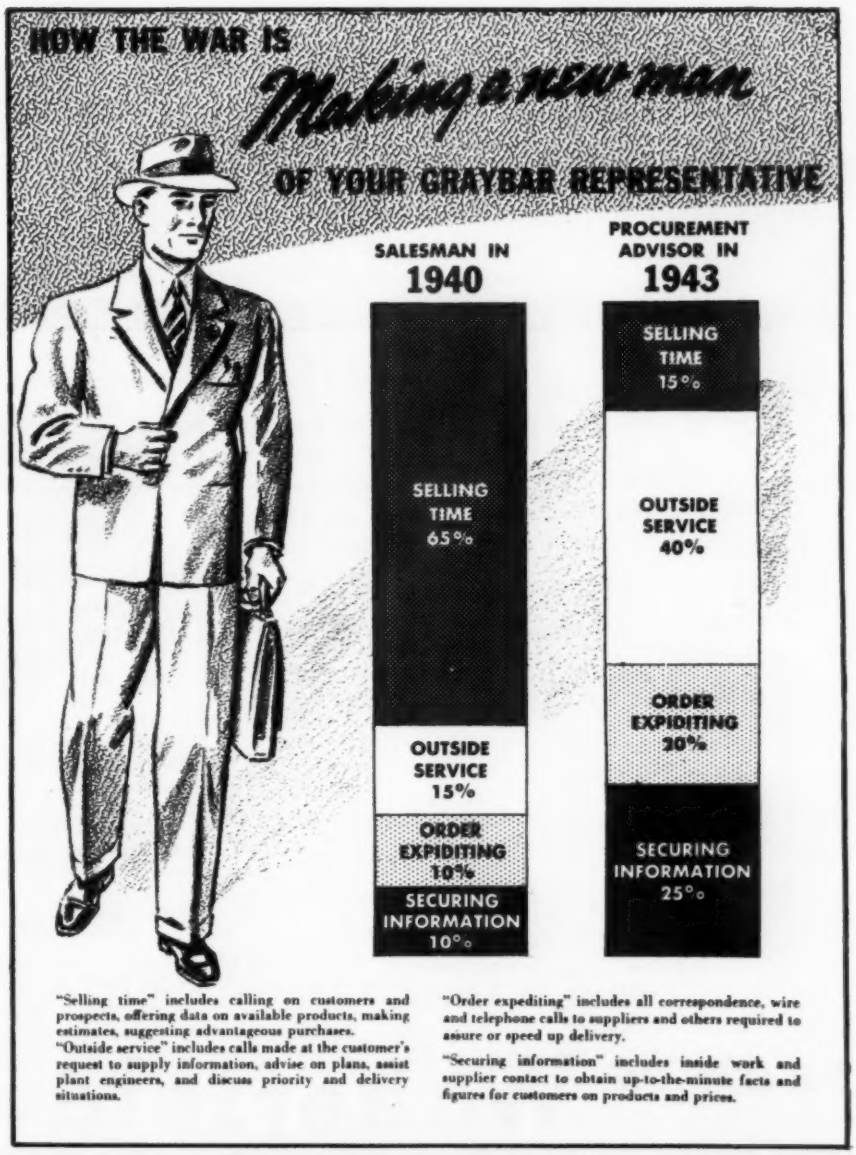
When a complicated order for electrical supplies and materials, numbering scores of different items made by dozens of different manufacturers (located from coast to coast) must be placed, what would be more logical than to call in Graybar? We have handled and today are handling thousands of orders like this. The work of assembling, receiving, warehousing, packing, shipping and billing orders of this kind can be handled smoothly and efficiently with time savings in ordering, expediting, receiving, bill checking and payment.

MANPOWER IS SAVED

when a wholesaler is streamlined for war

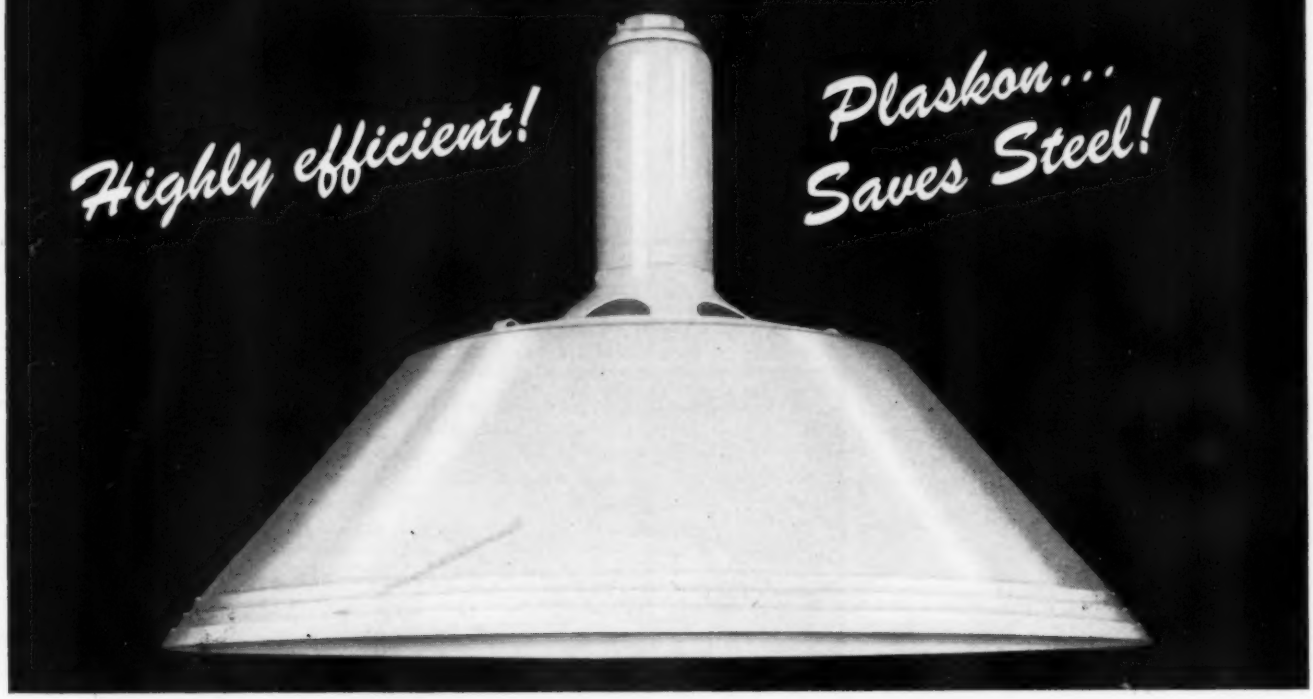
Fewer Man Hours In Procurement

Obviously, the function of procurement, when applied to buying a wide variety of electrical supplies and equipment, can be performed with less man hours of time through the use of trained, experienced men


HOW THE WAR IS
Making a new man
OF YOUR GRAYBAR REPRESENTATIVE
SALESMAN IN 1940
PROCUREMENT ADVISOR IN 1943
SELLING TIME 65%
OUTSIDE SERVICE 15%
ORDER EXPIDITING 10%
SECURING INFORMATION 10%
SELLING TIME 15%
OUTSIDE SERVICE 40%
ORDER EXPIDITING 20%
SECURING INFORMATION 25%
"Selling time" includes calling on customers and prospects, offering data on available products, making estimates, suggesting advantageous purchases.
"Outside service" includes calls made at the customer's request to supply information, advise on plans, assist plant engineers, and discuss priority and delivery situations.
"Order expediting" includes all correspondence, wire and telephone calls to suppliers and others required to assure or speed up delivery.
"Securing information" includes inside work and supplier contact to obtain up-to-the-minute facts and figures for customers on products and prices.

Here is presented graphically the change in emphasis that has become necessary in the activities of the average electrical wholesaler's salesman since the Defense and War Programs went into effect. Selling time is less than other functions.

NEW Wakefield COMMODORE
INDUSTRIAL UNIT



When you're lighting or relighting industrial areas, let these facts help you

- New COMMODORE Industrial unit gives 86% of light from bare bulb . . . 75% down on the job . . . by E.T.L. test.
- Plaskon reflector means light weight.
- Only 13 oz. of steel . . . helps WPB conservation.
- Gives light up, as well as down.
- No dark ceilings; no eyestraining contrasts.
- One of the most efficient industrial units known.
- Easy to clean . . . easy to handle.
- For lamps from 200 to 500 watts.

Write for details

Developed in cooperation with the Navy, this unit made by Wakefield provides important help at night . . . for those accidentally hurled overboard or to flyers down at sea. It lights up when it hits the sea and locates life saving equipment in the dark.

For outstanding war production . . . made possible through the untiring efforts of our men and women who make equipment which has helped save fighting ships and men.

ARMY E NAVY

THE F. W. Wakefield BRASS COMPANY

RED SPOT LIGHTING FOR COMBAT OPERATIONS AND WAR PRODUCTION

VERMILION, OHIO

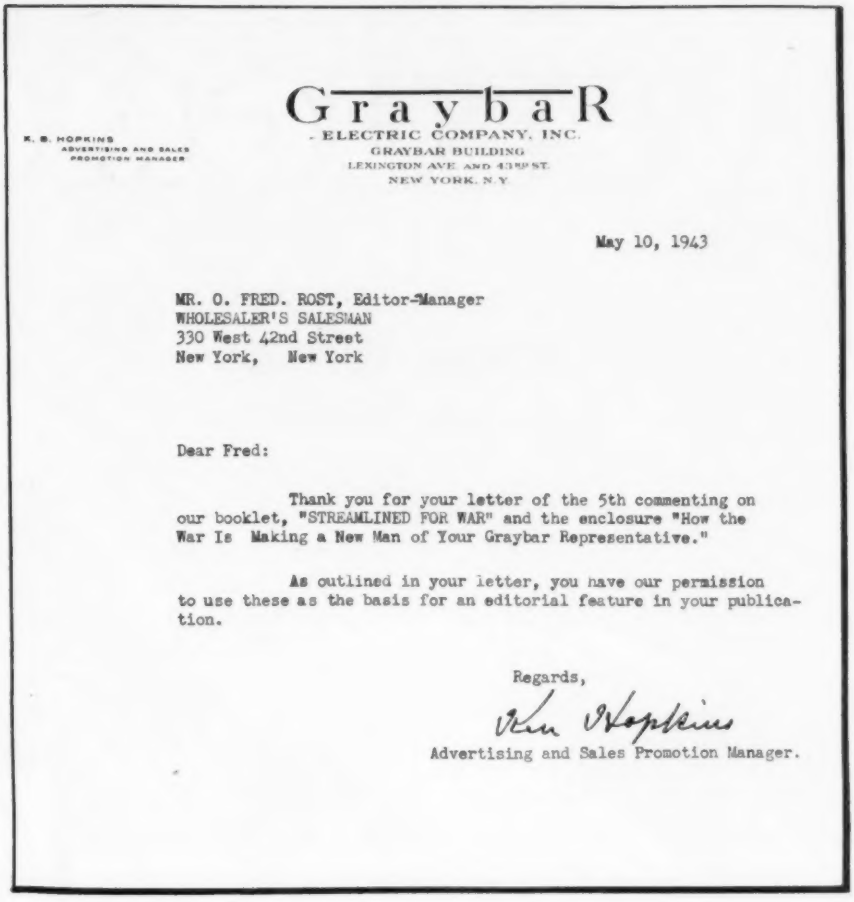
such as Graybar's corps of 400 procurement advisors. These men know electrical products and their application, which they have learned through years of experience and factory visits, they know who makes them and where to best get them, they know what can be used if specified items are not obtainable, they have a practical engineering background. They can help in making up specifications, bills of materials, furnishing product and application information, samples, etc. Why not use these trained men to the utmost and save time and manpower vitally needed for other war purposes?

Another Help In Procurement Time Saving

At the very beginning of defense activity, Graybar brought out its General Catalog No. 102. One thousand and seventy-two pages of condensed listings and illustrations on 40,000 different electrical items (Graybar handles 60,000 items). No one but a distributor like Graybar could bring out such a complete "Electrical Encyclopedia" showing the products of more than 200 manufacturers. Can you visualize the man hours saved by the use of 65,000 copies of this catalog, the great majority in the offices of Army, Navy, and War Industry Procurement and Engineering Departments? In addition, Graybar issues special catalogs on Lighting, Telephone Supplies, Signaling Apparatus, etc.

Fewer Man Hours In Handling

Graybar has a carefully trained corps of office and warehouse and service workers, particularly trained and geared to handle war orders. The functions of order editing, handling priorities, stock maintenance, order expediting, warehousing, receiving, assembling, shipping and billing require trained manpower. When the armed services or war industries place an order on Graybar, these trained men and women go to work and handle all the details which otherwise would be duplicated at many locations. Obviously time and manpower are saved for additional war work.



Graybar
ELECTRIC COMPANY, INC.
GRAYBAR BUILDING
LEXINGTON AVE. AND 43RD ST.
NEW YORK, N.Y.

K. B. HOPKINS
ADVERTISING AND SALES PROMOTION MANAGER

May 10, 1943

MR. O. FRED. ROST, Editor-Manager
WHOLESALER'S SALESMAN
330 West 42nd Street
New York, New York

Dear Fred:

Thank you for your letter of the 5th commenting on our booklet, "STREAMLINED FOR WAR" and the enclosure "How the War Is Making a New Man of Your Graybar Representative."

As outlined in your letter, you have our permission to use these as the basis for an editorial feature in your publication.

Regards,

K. B. Hopkins

Advertising and Sales Promotion Manager.

MATERIALS ARE SAVED

when a wholesaler is streamlined for war

One Stock Saves Many Factory Inventories

Another part of the job of "Streamlining for War" was the necessary planning to secure the most efficient use of materials. One important part of this job was to see that our stocks (limited though they are) are kept comprehensive. Thus, thousands of war plants, ordnance depots, navy yards, etc. will not have to keep duplicate stocks of hundreds (or thousands) of electrical items, immobilizing materials which could be immediately productive for war. One stock, Graybar's, will do for many.

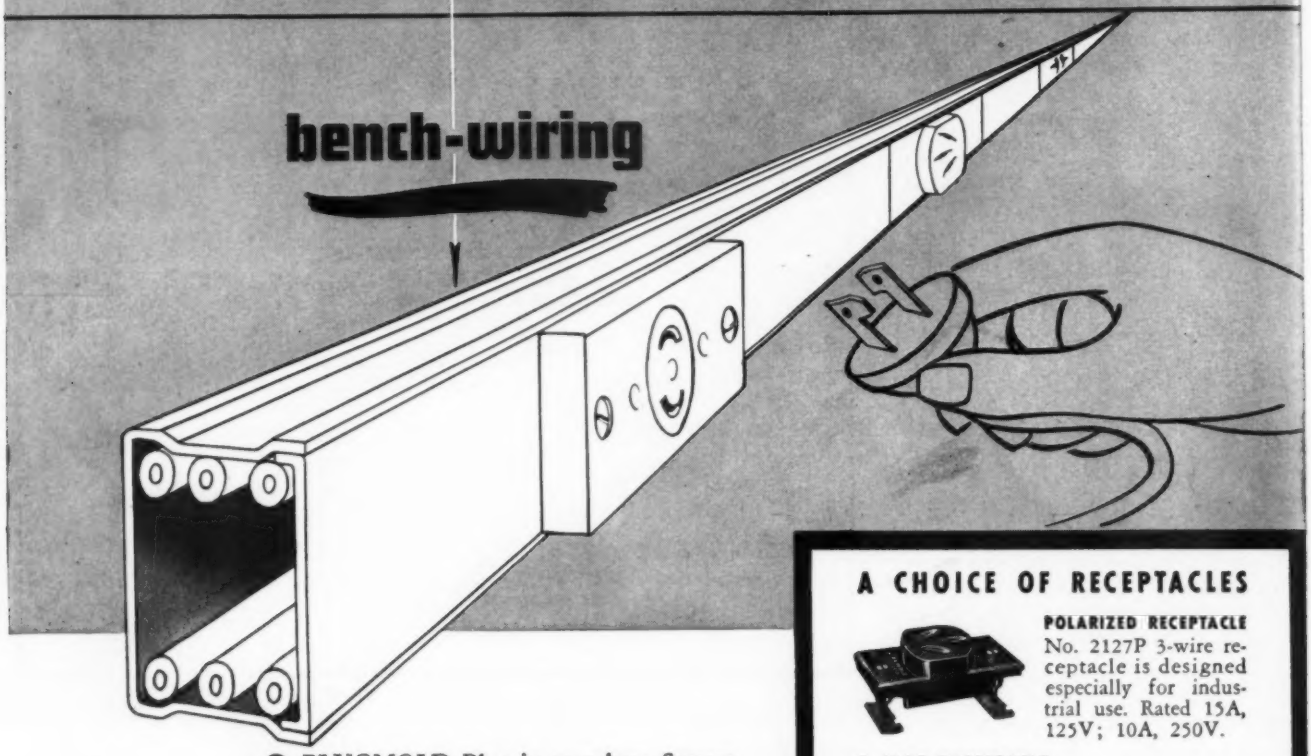
Rapid Turnover Means Less Inventory

Contributing to the best use of electrical materials is the Graybar plan of rapid turnover, several times as efficient as the best kept individual plant stocks could possibly be. Also helpful is our system of exchanging stocks between Graybar locations to meet emergencies.

Scheduling Deliveries Saves Materials

One scheme, which has been particularly effective in keeping scarce materials available to all, has been Graybar's plan of scheduling deliveries. Instead of placing huge orders for all the electrical materials needed for a large cantonment, shipbuilding yard or airplane plant (or for production items needed in making guns, tanks, planes or ships), we arrange with them to schedule ahead what they will require week by week. Then we, in turn, schedule these needs from stock and with our manufacturer-suppliers. This plan of anticipating needs has meant more scarce materials for all and steady manufacturing schedules for our suppliers. This scheduling saves times, manpower and materials. A

PLUGMOLD



● PLUGMOLD Plug-in-anywhere System Wiring meets an immediate need in the majority of industrial plants for work-speeding, space-saving industrial convenience wiring that complements work-simplification methods.

No. 2100 PLUGMOLD, with a choice of industrial type receptacles for electrical hand tools, work lights, test devices and bench appliances, places outlet receptacles in any desired number *exactly* where they are needed by workers . . . at bench level, along assembly tables, in the laboratory, drafting room or office. Outlets can be added or relocated with little disturbance to workers. Original installation or extensions can be made with a minimum of critical materials for a given electrical load capacity. Plugmold also promotes safety by eliminating dangerous long extension cords . . . saves constant cord replacements and breakage of connector plugs. Conforms to Federal Specification W-R-32. Listed by U. L. The Wiremold Company, Dept. WS-8, Hartford 10, Conn.

Write for industrial Wiring Bulletin and Engineering Data Sheets.

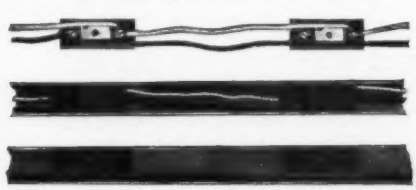
A CHOICE OF RECEPTACLES

POLARIZED RECEPTACLE
No. 2127P 3-wire receptacle is designed especially for industrial use. Rated 15A, 125V; 10A, 250V.

T-SLOT RECEPTACLE
Designed to accommodate plugs with either parallel or tandem blades. No. 2127S is rated 15A, 125V; 10A, 250V.

EASY TO ASSEMBLE AND WIRE

Connections easily made to ends or base.



Wire receptacles, insert in channel and snap on cover.

WIREMOLD CAN HELP YOU

PRODUCE FOR WAR... AND PLAN FOR PEACE

different, but effective, "Controlled Materials Plan."

Trained Manpower Saves Materials

The expert knowledge of Graybar Procurement Advisors and Graybar Product Specialists often helped to avoid over-ordering or ordering the wrong thing, either of which could cause a slowdown in the orderly process of distributing electrical materials. Graybar Product Specialists are really Application Engineers who concentrate on Communications, Power, Lighting, Wiring, Signaling, etc. They have been of exceptional service to the army, Navy, and to War Industry.

(A) Procurement Manpower

Functioning in the job of helping save critical materials in electrical procurement are two groups of Graybar men:

(1) Graybar Procurement Advisors who are available to the Army, Navy or to war plants needing advice or help on: catalog, price or delivery information; samples or information on alternate items; help in listing bills of materials.

(2) Graybar Specialists (Department Managers) trained as application engineers in their special fields of Aviation, Marine, Lighting, Power, Wiring, Communications, etc.

(B) Office Manpower

Backing up our Procurement Advisors and Department Managers (Specialists) are a group of Graybar Men and Women carefully trained to handle quickly and accurately all of the important work entailed, in order editing, stock maintenance, extending priorities, placing and following orders on suppliers, billing, etc. It takes about two years to properly train one of these office operations people to do an efficient all-around job. They are well equipped to help save critical materials.

(C) Warehouse Manpower

Our Procurement Advisors, Department Managers and Office Operations people could all function perfectly but unless they were in turn, helped by a well-trained Warehouse Group we could not properly serve our war customers. From the Receiving Clerk, to the Warehouse Man, The Assembler, the Packer, the Shipping Clerk and the Delivery Man, all must do their specialized jobs well (functioning under an expert Warehouse Foreman) if the order is to be delivered promptly and correctly.

MONEY IS SAVED

when a wholesaler is streamlined for war

Individual Plant Inventories Cost Money

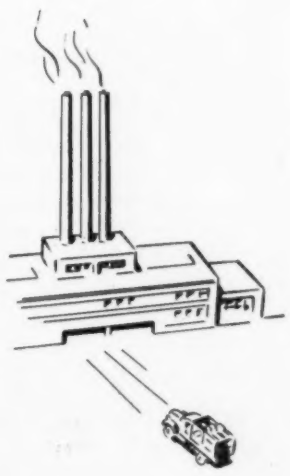
If all of Graybar's war industry customers maintained their own stocks of electrical replacement and maintenance equipment, and if all these individual plants charged all the proper costs, (depreciation, transportation, warehouse space, handling costs, obsolescence, taxes and interest on their investment) against their inventories, the total cost would be something like 25-30 percent of the inventory investment. Graybar does all of this job for its war industry customers at less than half this cost. Some of the reasons for this differential are: lower turnover of individual inventories, smaller units causing higher transportation costs and greater depreciation and obsolescence of individual stocks.

Saves Paper Work

Another great saving, sometimes not calculated, is the saving of paper work. Assume that a certain war order calls for 7 electrical items from 7 manufacturers. If this order is placed with Graybar, the following paper work will be saved; 6 orders, 6 priority extensions, 6 order follow-ups, 6 delivery receipts, 6 invoices to check, and 6 checks to write. It has been estimated that procurement through the distributor will save government departments and war industries 60-70 percent of their paper work.

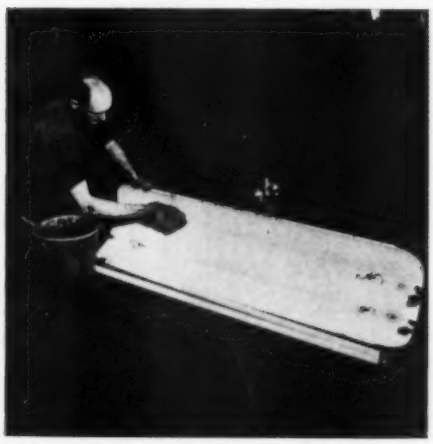
Spreading Cost Lowers Them

By spreading the cost of performing all the functions of distribution (previously mentioned) over lines made by more than 200 manufacturers, Graybar does a better job and does it more economically than could one or even a sizeable group of manufacturer-suppliers do all these things for themselves. Several manufacturers have estimated that they would have to increase present selling prices to war users by 15 percent or more, if they had to abandon their distribution setup and perform all the distributor's functions for themselves.



Promoting Better Lamp Servicing NOW—

Helping war plants get the most from their lighting systems is a contribution to the war effort that every wholesaler's salesman can make. Such work will also serve him as a good-will builder and as a contact for sales of additional lighting units. It will help pave the way for changeover jobs and prospective reconversion business.



A vital job in all lighting maintenance. Soap and water, applied energetically and frequently will help keep up the level of light so necessary to war plants.

Adequate cleaning equipment is always important. This truck has one tank for cleaning solution, another for rinse bath, space for cloths, etc.

Salesmen can aid their customers by advising them to consider accessibility of fixtures before the installation is made. These may be lowered for cleaning.

HOW TO CHECK A FLUORESCENT CIRCUIT

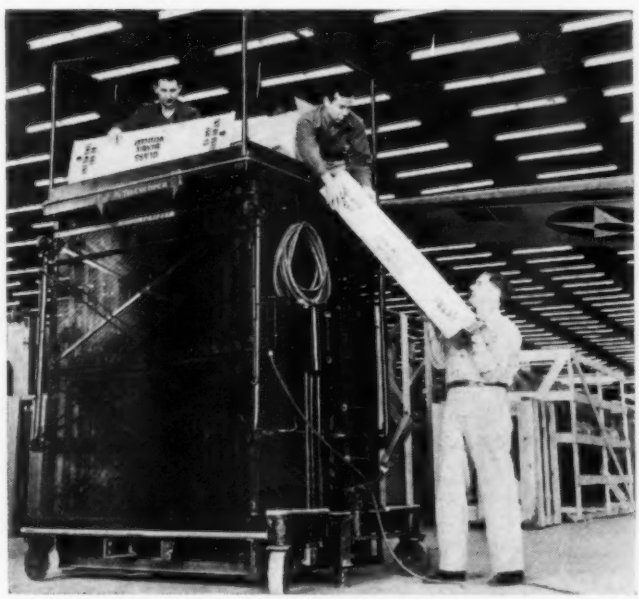
1. CHECK THE ELECTRICAL SUPPLY. After determining that electrical connections are perfect and that voltage is there, test the line voltage to see that it is correct. It is very essential that the voltage be within the range for which the ballast is designed: 110-125, 194-220, 220-250. The voltage must be maintained within these limits.

2. CHECK THE STARTING SWITCH. The starter, like the lamp, is a renewable part of a fluorescent circuit and should be the first part suspected after voltage has been found correct. Replace the starter with a starter that is known to be good. If it is possible to start the lamps with the substitute starter, it is safe to assume the original starter was the cause of trouble.

3. CHECK THE FIXTURE. Look for poor contacts in the lamp socket by twisting the lamp gently with the current on to see if proper contact can be made. Check the connections to the lamp sockets to see if they are tight. Where a combination lamp socket and starter is used, be sure the connection between these parts is tight. Look for grounds and short circuits or crossed wires.

4. CHECK THE BALLAST. The ballast may be checked for an open circuit or ground by means of a bell ringer or similar device, if desired. Excellent test kits are available for testing the ballasts.

Courtesy of Champion Lamp Works.



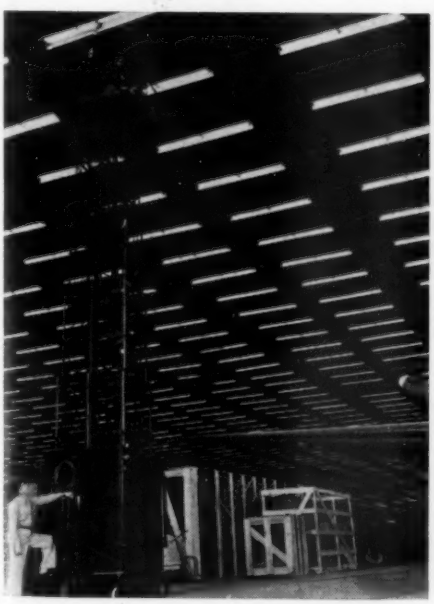
For higher installations a salesman's customers will have to consider movable towers or telescopic platforms. A large airplane plant has this elaborate and effective device.

Aids Production . . Builds Future Sales

Salesmen must have a knowledge of lighting maintenance and some of the problems involved.

As permanent mounting is more common, salesmen should watch for practical methods of gaining access to fixtures. This is one, a brace added to a regular ladder.

For the larger war factory, salesmen will be wise to suggest that their customers consider portable platforms. This one rolls through two aisles, straddling the machinery between. It is helpful when many fixtures are the same height. Photos above and left from General Electric.



The platform is raised by electric power. Two of the crew work on the platform, one below operates the controls.

A certain aircraft factory has provided an example of supplementing the mobile platform, reaching lighting fixtures via a "lamping bridge" which travels on the regular crane rails. Photos from Westinghouse.

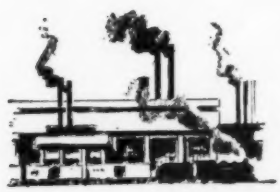
"When it comes to warplant lighting . . .

this label tells me what I want to know!"

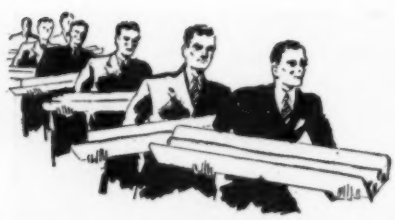
Certified
FLEUR-O-LIER
The Manufacturer guarantees by affixing this label that this Fluorescent Luminaire is a duplicate of samples found by periodic examination to comply with the minimum requirements as set up in the
"SPECIFICATIONS FOR LUMINAIRES, FITTINGS AND AUXILIARIES FOR FLUORESCENT LAMPS"
which are sponsored by the Manufacturers of Mazda Lamps.
Electrical Testing Laboratories, Inc.
NEW YORK, N. Y.
E-T-L
A COPY OF THIS CERTIFICATE SHOULD APPEAR UPON EACH UNIT OR PACKAGE
FLUORESCENT LIGHTING FIXTURES EMPLOYING EXISTING TYPES OF LAMPS ARE NOT RECOMMENDED FOR SCHOOLS, OFFICES AND SIMILAR LOCATIONS UNLESS LAMPS ARE SHIELDED FROM DIRECT VIEW
THIS CERTIFICATION IS CONTINGENT UPON EMPLOYMENT OF CERTIFIED AUXILIARIES OF OVER 85% POWER FACTOR

It saves a score of questions. It saves more scores of manhours and money in maintenance. And it can save production headaches. Because this label on a fluorescent lighting fixture means it's a FLEUR-O-LIER . . . TESTED—CERTIFIED—GUARANTEED!

Then checks are made at quarterly intervals by an E. T. L. inspector who visits the factory of each participant.

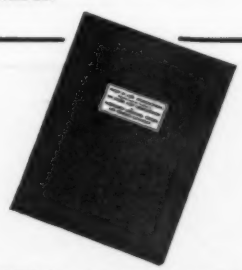


FLEUR-O-LIERS conform to all WPB conservation orders. They're available only with suitable priority rating. Whenever warplant fluorescent is indicated, be sure to specify fixtures bearing the FLEUR-O-LIER label.



35 leading fixture makers participate in the FLEUR-O-LIER program . . . build their fixtures to rigid standards set up by Mazda lamp experts. Every single part of a FLEUR-O-LIER is tested to those standards, and Certified by impartial experts—Electrical Testing Laboratories, Inc., of New York—at the beginning.

Starters and ballasts have their own Certification tests to make sure you get high power factor and reliable operation. The result? You don't have to test either the whole or any part of a FLEUR-O-LIER again. The LABEL tells you it's *right.*

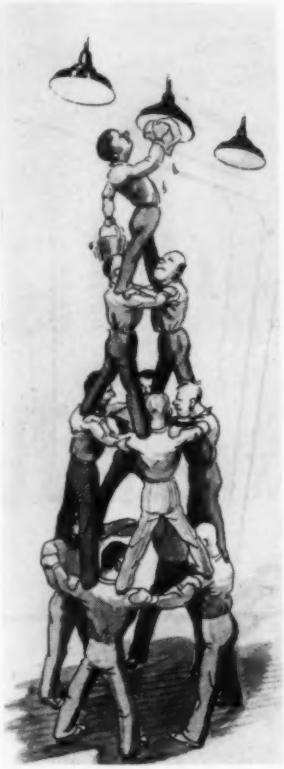


Write NOW for new booklet containing complete FLEUR-O-LIER engineering specifications. You'll want them for ready reference when you specify lighting equipment. With them you'll get the FLEUR-O-LIER story and list of manufacturers. Address FLEUR-O-LIER MANUFACTURERS, 2121-8 Keith Building, Cleveland 15, Ohio.

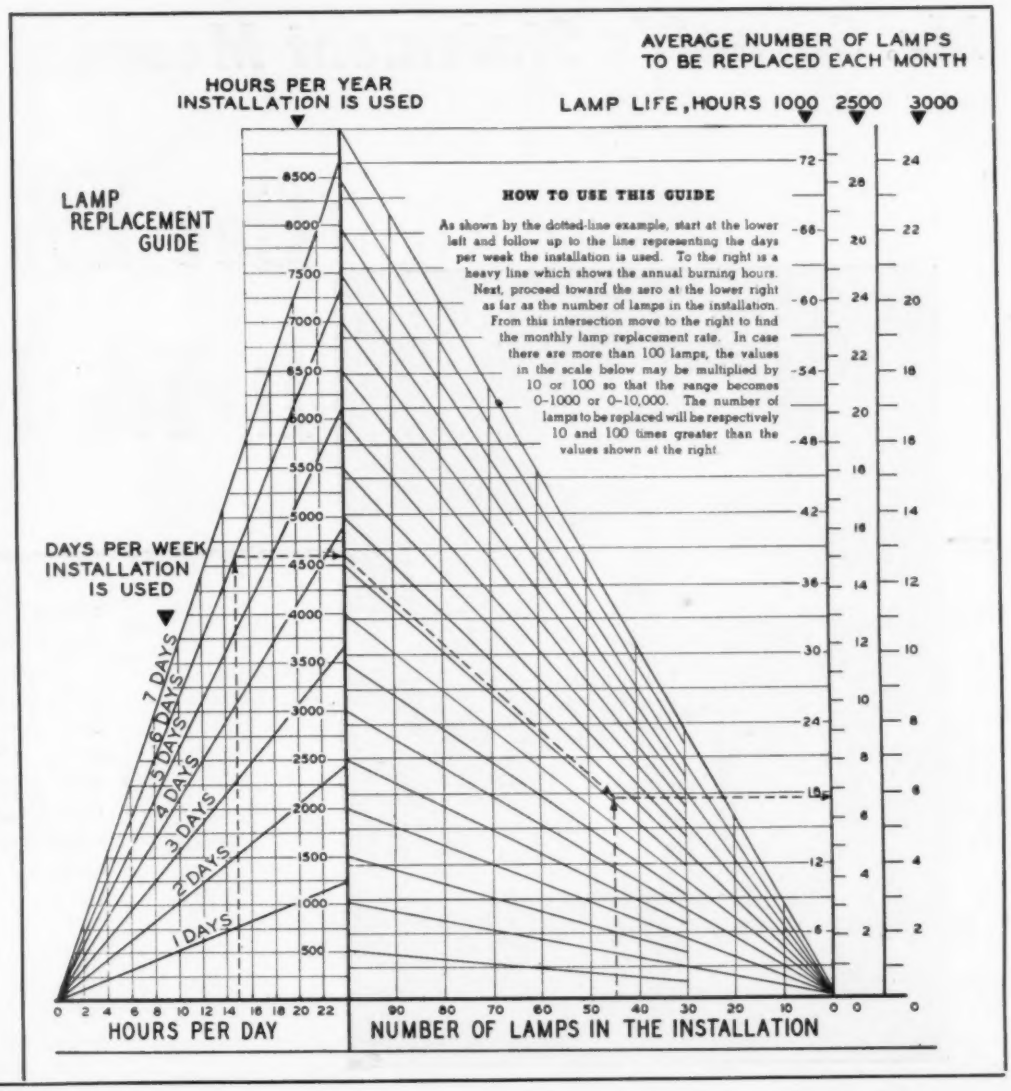
FLEUR-O-LIERS

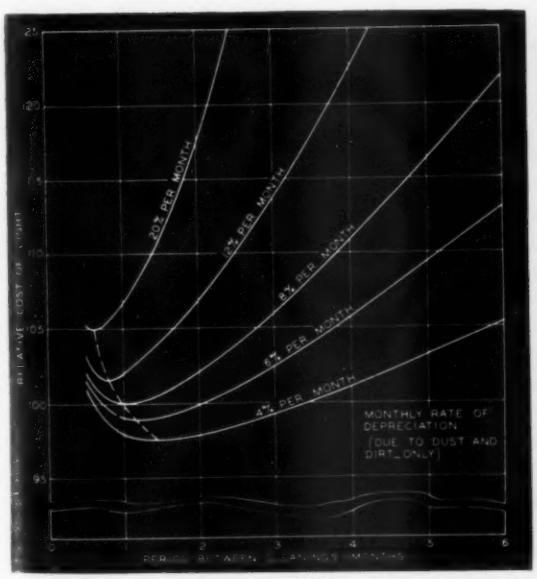
CERTIFIED FIXTURES FOR FLUORESCENT LIGHTING

Participation in the FLEUR-O-LIER MANUFACTURERS' program is open to any manufacturer who complies with FLEUR-O-LIER requirements

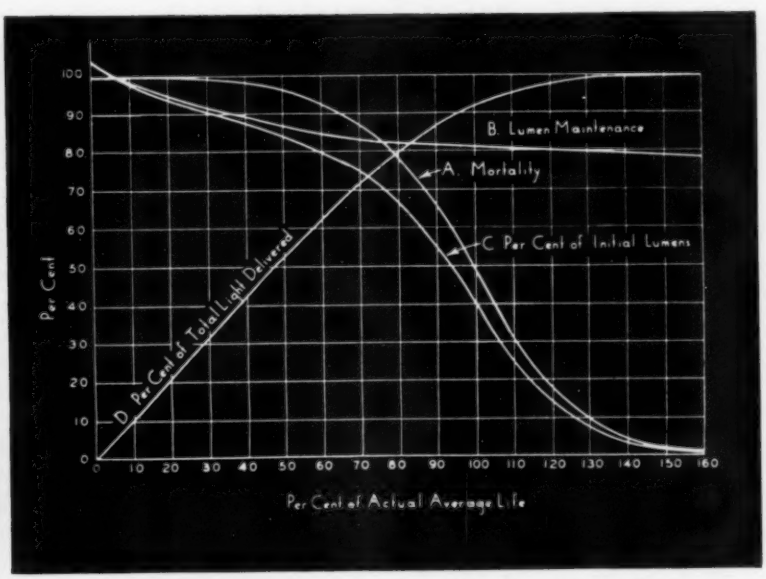


Of course there are other ways of reaching high-bay installations, if the salesman's customer has manpower and imagination. The GE artist suggests one.


AVERAGE NUMBER OF LAMPS TO BE REPLACED EACH MONTH
HOURS PER YEAR INSTALLATION IS USED
LAMP LIFE, HOURS 1000 2500 3000
LAMP REPLACEMENT GUIDE
HOW TO USE THIS GUIDE
As shown by the dotted-line example, start at the lower left and follow up to the line representing the days per week the installation is used. To the right is a heavy line which shows the annual burning hours. Next, proceed toward the zero at the lower right as far as the number of lamps in the installation. From this intersection move to the right to find the monthly lamp replacement rate. In case there are more than 100 lamps, the values in the scale below may be multiplied by 10 or 100 so that the range becomes 0-1000 or 0-10,000. The number of lamps to be replaced will be respectively 10 and 100 times greater than the values shown at the right.
DAYS PER WEEK INSTALLATION IS USED
7 DAYS
6 DAYS
5 DAYS
4 DAYS
3 DAYS
2 DAYS
1 DAYS
HOURS PER DAY
NUMBER OF LAMPS IN THE INSTALLATION



Relation between cost of light and frequency of cleaning for various rates of depreciation. GE chart.


B. Lumen Maintenance
A. Mortality
C Per Cent of Initial Lumens
D Per Cent of Total Light Delivered
Per Cent
Per Cent of Actual Average Life

Relation between percent of total light delivered and other factors considered in lamp maintenance. Chart courtesy of Sylvania Products.

Mr. Sarnoff's Statement Means:

Cut Your Costs, I
If You Expect To C

David Sarnoff,
President, Radio Corporation of America

RAPID expansion of new markets and reductions in costs of distribution, thereby making possible lower prices to consumers, are the post-war promise of a new way of applying scientific research to the complex problems of commercial distribution.

Because it creates the possibility of increased peacetime industrial production and employment, this development is regarded by RCA as highly important in its post-war planning, according to David Sarnoff, President.

"Industry in general faces one of its greatest challenges," Mr. Sarnoff said, "in the obvious necessity to maintain after peace is won the high levels of employment brought about by the nation's war-time battle of production. We believe that the new methods we are developing to deal with the high costs of distribution will be a major factor in helping this company meet its share of the challenge."

So successful has been the application of the fact-finding methods of science to the problems of distribution, according to Mr. Sarnoff, that it is now apparent this new type of commercial research soon must be given importance equal to technical research as a necessary tool of American business.

"Industry called in science years ago to solve its technical problems," Mr. Sarnoff explained. "The constant succession of improved and new products, together with the extraordinary advances in mass production and lower consumer prices over a long period of time, marks the success of this idea.

"Increasingly stronger competition and the growing need of industry generally to expand employment caused us more than two years ago to examine closely all factors having to do with costs in the radio industry. Production costs were found to be approaching the minimum, distribution costs excessively high. The latter were equal to, and in some instances greater than, the former. So we decided to call in science again, to see if it could not do the same job for distribution that it has done for production."

As a consequence, the RCA Victor Division set up in Chicago a new department called Commercial Research. It operates under the supervision of Vance C. Woodcox, RCA Victor Regional Director, with E. W. Butler as department manager.

Accomplishments of our Department of Commercial Research to date include:

1. Completion of nearly forty research projects related to distribution, resulting in the accumulation of concrete evidence that distribution's

Increase Sales Efficiency— Qualify as Electronic Distributor

complex problems can be simplified and its high costs substantially reduced.

2. Development of new methods and practices in both wholesale and retail distribution, tested and proved as to their efficiency and effectiveness.

3. Installation in Chicago of a completely new system of wholesale distribution for one of our important products (phonograph records), which achieves major economies in work, time, and costs.

4. Preparation of plans for passing on the results of the Department of Commercial Research to independent wholesale and retail dealers, who may adopt them completely or use them as standards against which to check their own individual methods.

The new methods of "streamlining" distribution in relation to our numerous products are believed to be significant, according to Mr. Sarnoff, because they are largely fundamental and, therefore, adaptable to other lines of merchandise.

The problems of distribution are grouped by Mr. Sarnoff under two broad headings: (1) Operations and, (2) Merchandising. Classified under operations are management and personnel, shipping and warehousing, space layout, inventory control, and accounting. Under merchandising come general policies, pricing, sales organization, advertising, and sales promotion.

These problems are related by the Department of Commercial Research to three types of distribution—wholesale, retail and direct. The fact-finding methods of science are applied in all instances. Nothing is taken for granted. Even standard practices, long accepted as sound business conduct, are given rigid tests. As a result, new standards of evaluation have come into use and they are causing many of the traditional ideas about business to be discarded.

In some instances, the "time and motion" studies used so successfully in production have been effectively applied to distribution methods, while in others newly-developed methods of simplification and standardization have achieved remarkable results.

"The chief aim is to eliminate, insofar as possible, the guess-work from business judgment," Mr. Sarnoff said. "Very little exact data exists in the field of distribution; therefore, management is required to exercise much of its judgment on the basis of traditional business experience.

"When we place traditional experience under the microscopic examination of this new type of commercial research, a very surprising amount of it is found to be unjustifiable. Our studies, however, have proved that distribution can be developed into a science, wherein exact knowledge takes the place of commercial folklore in the formation of business practices."

Mr. Sarnoff called particular attention to the fact that commercial research activities are extending beyond the confines of the producer and distributor to the buying public, where habits, needs and desires of the customer are being carefully charted in order to create a more accurate picture than has ever been available of 'what' and 'how' to supply him.

One of the most interesting phases of studies made thus far, said Mr. Sarnoff, concerns the exploration of new markets for both old and new products. An important element in this connection, he pointed out, is the swiftly accelerating trend in the radio industry to become, in addition to a supplier to the individual consumer, a supplier to industry itself of both communications and non-communications products.

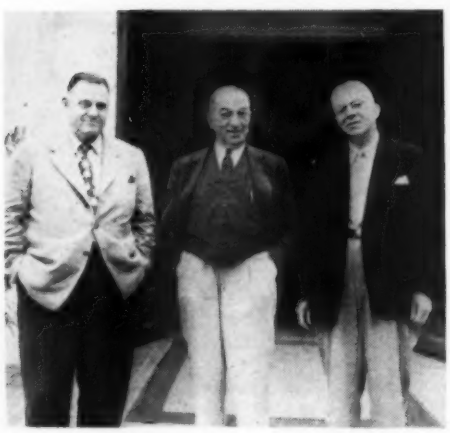
"Technical research at the other end of the line is fast applying radio-electronic principles to the development of devices which greatly speed up, simplify, and make more effective numerous methods and processes in industrial manufacturing," Mr. Sarnoff added. "These products are mostly of the type that requires direct distribution rather than wholesale or retail distribution; therefore, it now is the job of commercial research to determine what manner of direct distribution is best.

Camera Clicks at NEWA Pacific Conference Santa Barbara June 17-19

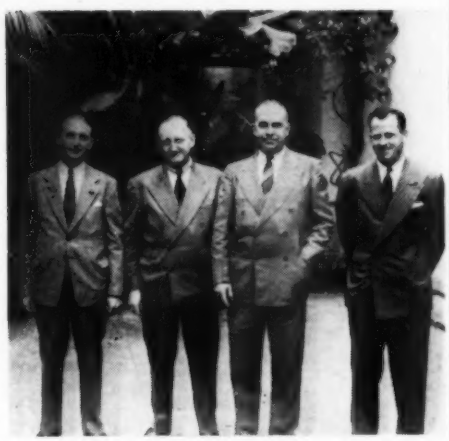
D. E. Harris (left) Pacific Coast vice-president, General Electric Supply Corp., congratulates Harry Perl, president, State Electric Supply Co., Oakland, who is new chairman of the Pacific Div.

R. A. Balzari, secretary of the Pacific division, NEWA, and Howard Ehrlich, founder of the "Wholesaler's Salesman," now executive vice president, McGraw-Hill Publishing Co.

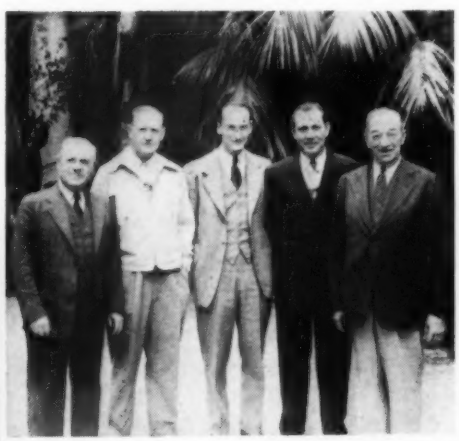
M. G. Sues, Los Angeles manager, Leo J. Meyberg Co., and Walter Thompson, Pacific Coast manager, Westinghouse Lamp.



George Curtis, Smoot-Holman Lamp Co., J. A. Kahn, Rocky Mountain district manager, General Electric Supply Corp., and M. C. Hixson, San Francisco manager, G-E lamp department.



U.S. Rubber Co. delegation included (left to right) Fred D. Benz, Pacific Coast manager, wire and cable division, F. E. Staible and H. F. Johnson, New York, and Jack Milne, San Francisco.



Salt Lake's one hundred percent turnout at the meeting: (left to right) Sam Rosenfield, owner, United Electric Supply Co., Roy Kimberlin, manager, Graybar Electric Co., H. W. Price, manager, electrical department, Salt Lake Hardware Co., John Longden, manager, Westinghouse Electric Supply Co. and J. A. Kahn, Rocky Mountain manager, General Electric Supply Co.

Dave Saulsbury, Seattle manager, and Clyde Williams, San Francisco district sales manager of Westinghouse Electric Supply Company.

J. P. Carson, San Francisco district manager, Graybar Electric Co., and E. E. Buerkel, sales manager, Incandescent Supply Co., San Francisco.

A PRIMER OF ELECTRONICS

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PART I

ELECTRIC CURRENT

Chapter 1

What Does "Electronics" Mean?

Once upon a time not so long ago, there was a sales meeting. The group of men present were discussing what all business groups discuss—the future progress of their company and what they, as salesmen, would be called upon to sell. The company they represented to the buying public manufactured light sources and equipment, radio tubes, and other types of vacuum and gaseous discharge tubes for communication, detection and similar purposes.

The word "electronics" popped up frequently until finally someone asked, "Just what is 'electronics'? If we are going to deal with electron tubes and devices utilizing them, we need to know a great deal more about them."

The word "electronics" has received a tremendous amount of attention during the past few months and it may be destined for some abuse by being applied where it does not appear to belong. On the other hand, a simple candle could technically be called an electronic device since it involves electrons in motion and a consequent physio-chemical change. It would seem however that the science of electronics may deserve a category of its own, even though there appears to be no sharp dividing line between an electronic device and non-electronic device.

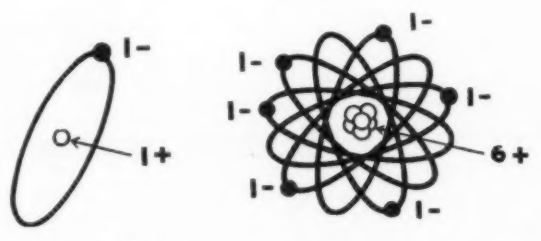
The word *electron* is a noun applied to the basic element of electric charge. The American Standards Association defines an electron as, ". . . the natural, elementary quantity of negative electricity," and electronics as, ". . . that branch of science and technology which relates to the conduction of electricity through gases or in vacuo."

Perhaps, then, we can more properly apply the word "electronic" to a device or tube which is *deliberately* designed to make use of electron emission, rather than to one in which the electronic characteristics are more or less incidental. Within the electronic category would come radio tubes, fluorescent lamps and a great many other vacuum or gaseous discharge tubes, in the field of communications, surgery and general industry.

Basic Substance—The Electron

All substances are composed of atoms—infinitesimally small particles of matter, something less than hundred millionth of an inch in diameter. They are not necessarily solid spheres or cubes, but rather might be considered as little knots of balanced energy. They have a central kernel or nucleus which is made up primarily of positive electrical charges called protons, and around which negative charges, called electrons, rapidly revolve in much the same way that the planets revolve around the sun. This theory of atom structure was developed by Dr. Nils Bohr, a Danish scientist who first brought it to the attention of physicists in 1913.

These inconceivably small whirling systems make up all matter. The fundamental difference between one element and another is in the number of electrons revolving around the nucleuses of its atoms. A hydrogen atom, for instance, has only one electron revolving about its nucleus,



HYDROGEN CARBON

Atomic structure, as seen in the simple atom of hydrogen, left, where one electron revolves around one positively charged nucleus of one proton, and the complex carbon atom, right, where six electrons swarm about a nucleus of six protons.

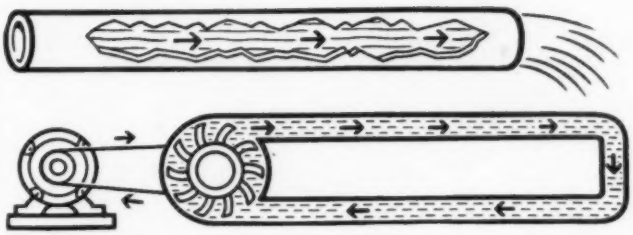
whereas a helium atom has two; carbon, six; oxygen, eight; and so on for each of the elements thus far discovered. A mercury atom has eighty electrons swarming around its nucleus, and a few other elements still more. The smallest unit of an element or compound which retains the identity or character of the solid or fluid substance, is a cluster of atoms called a molecule. The water we drink, for instance, is composed of two parts of the element hydrogen and one part of the element oxygen, that is, its molecule consists of two hydrogen atoms and one oxygen atom. It is expressed chemically as H_2O.

The charge of each individual electron is always the same, regardless of its source. In an ordinary electrically-neutral atom, the total positive charge of the nucleus or core is equal to the total negative charges of the planetary electrons around it. Although this treatise adheres to the theory that electrons are pure or basic negative charges for the sake of simplicity, the true nature of the electron is not definitely established. They have weight and mass but their solid form, if any, is not clearly understood. One ounce of electrons would contain about 30 billion, billion, billions of them.

The Theory of Electric Current

Since all substances are made up of atoms, all must contain electrons because they are a part of the atoms. However, there are also in all materials varying amounts of so-called *free-electrons* which are not bound tightly to atoms, but which are free to move about in all directions from one atom to another. The fact that their speed may be stimulated by the application of additional energy such as heat, will be touched upon later. In certain kinds of atoms some of the electrons can be moved relatively easily from atom to atom. Such substances are called "electrical conductors", and include copper, aluminum, iron, and many other metals, compounds and liquids. In other atoms, the electrons are more tightly bound to the atom. Therefore, such substances as rubber, mica, paper and oil are nonconductors because they greatly impede the flow of electricity.

Thus in a copper wire, electrons move at random in every direction within the metal. When in addition to this motion there is a definite drift of electrons along the conductor, an electric current is said to be flowing. This flow of electric current may be compared to the flow of water in a pipe. The force that starts these electrons moving in one direction is called an *electromotive* force (E.M.F.) and will be considered more in detail later.



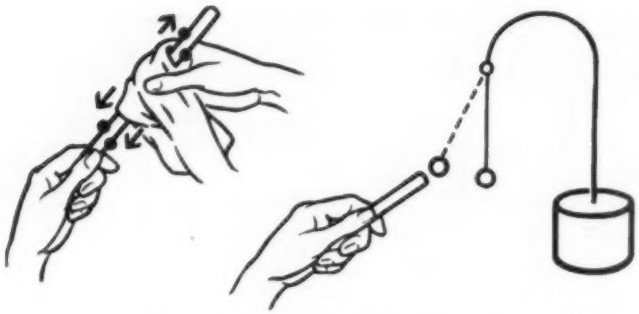
Electrons flowing along a conductor may be compared to the action of water flowing through a pipe. Direct current flows like water from a centrifugal pump, through a continuous loop of pipe back to the pump, as seen above.

Direct current always flows in the same direction. Its flow may be compared to the flow of water from a centrifugal pump—through a continuous loop of pipe, and back to the pump.

Early Observations and Natural Electric Phenomena

The Greeks had a word for electricity. It was "elektron" which translated means amber. Thales of Miletus, an ancient Greek philosopher, is said to have been the first to observe that an amber rod when rubbed, would attract straws and other light objects. This simple experiment performed 2500 years ago, marks the first time man became aware of electricity. Today, every woman is familiar with a similar phenomenon when her silk slip clings to her dress, and all office workers know how a sheet of paper sticks to the surface

The "discovery" of electricity by Thales about 2500 years ago, was based on the ability of amber, when rubbed with flannel, to pick up various light-weight objects.

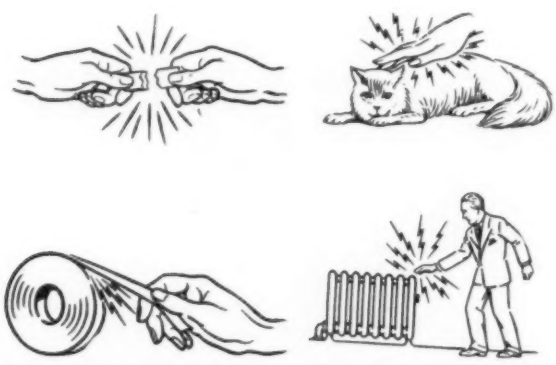


A glass rod, when rubbed with dry flannel, becomes negatively charged because it has acquired a surplus of electrons. The rod will then attract a pith ball (right), or it will repel a similar negatively-charged rod.

of the desk if it is rubbed vigorously a few times and will even crackle when lifted from the desk.

When a glass rod is rubbed with dry flannel, friction transfers some electrons from the flannel to the glass rod. The rod becomes *negatively* charged because it has acquired a surplus of electrons and the flannel becomes *positively* charged because of a deficiency of them. If the same thing is done again with another rod and flannel, it will be found that the rods, if suspended on a cord (and insulated from the ground), will tend to repel each other, as will the two pieces of flannel, but that the rods and flannel are attracted to each other. Thus we find a fundamental law of electricity—that like charges repel each other and unlike charges attract each other. In other words, matter resents being thrown out of balance electrically, and seeks to regain balance by discharging a surplus of electrons to other matter having a deficiency of them or at least a more nearly neutral electronic state.

There are a great many visible examples of electron discharges in everyday life. When a lump of sugar is broken, a cat's fur rubbed or a roll of friction tape unrolled, sparks can be seen if the room is dark enough. The friction creates an electronic discharge in each instance. Another example which has caused discomfort and surprise to thousands of people is the result of scuffing feet along a dry rug and then touching a radiator or another person with a finger tip. The friction of scuffing charges the body with an excess of electrons which are promptly discharged with a spark upon contact with a non-charged object.



Above are illustrated familiar examples of electronic discharges which are seen in everyday life. Friction causes the spark.

Measurement of Electric Current Flow—The Ampere

It has already been pointed out how the flow of current is somewhat like the flow of water in a pipe. Water flow can be measured in gallons per second. Electric current flow can be measured if we determine the total quantity of electrical charge moved and the time involved in moving it.

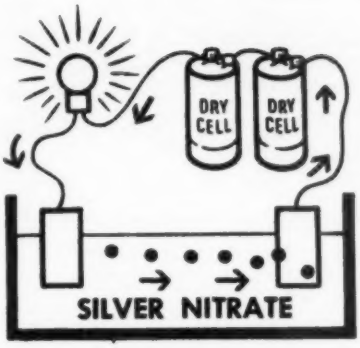
The flow is measured in terms of its effect upon certain chemicals. The quantity of electricity which will deposit 0.00118 grams of silver in a standard silver nitrate solution is known as the "coulomb". This unit was named in honor of the famous French physicist, Charles A. Coulomb. The total quantity of charge in coulombs may be determined by weighing the negative plate before and after the time interval of current flow and dividing this weight in grams by 0.00118. Then by dividing the number of coulombs thus obtained by the total number of seconds for which the current flowed, the number of coulombs per second can be obtained. And coulombs per second equals *amperes*. (Named in honor of Andre Marie-Ampere, also a French physicist.)

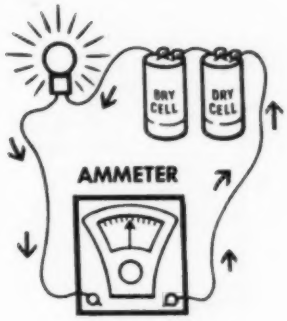
Of course such a method of measuring current is inconvenient and could not be used today except experimentally, so the ammeter has been developed which is connected in series with the load and the current read directly in amperes on the scale of the instrument.

Measurement of Electrical Pressure—The Volt

In discussing current flow in the preceding paragraphs, no account was taken of the electrical pressure forcing it. Of course some sort of pressure is necessary if it is to flow at all. The unit of such electrical pressure is called the "Volt", named for Alessandro Volta, an Italian scientist.

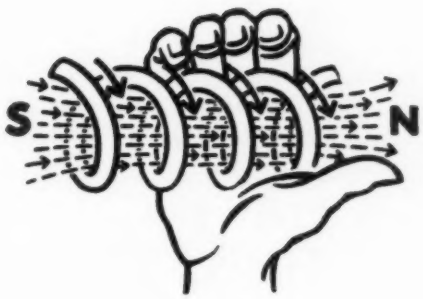
An understanding of voltage may be clearer if





Electricity is measured by the quantity per second passing through a conductor. The unit of quantity is an ampere, established in the laboratory by using a silver nitrate solution, scales and a measure of time (above, left and center). Commercially, an ammeter, above right, measures the quantity of electricity passing through a circuit.

Andre Marie-Ampere, left, discovered the "right hand rule" shown at right, which establishes that when a coil is held in the right hand, and the current flows in the direction of the fingers, the thumb always points to the north pole of the magnetic field which is set up in the coil.

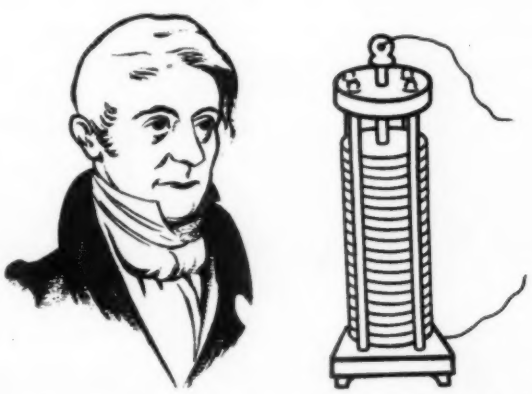


the water analogy is used again. If two holes of the same diameter are punched in a water tank, one near the top and one near the bottom, the water will flow more rapidly from the lower hole than from the upper one. The reason for this is the difference in fluid pressure at the bottom and top of the tank. Obviously, the weight of water or pressure is greater at the bottom, so the water is forced out more rapidly. The difference in the two pressures is called the difference in *potential* and it can be easily measured.

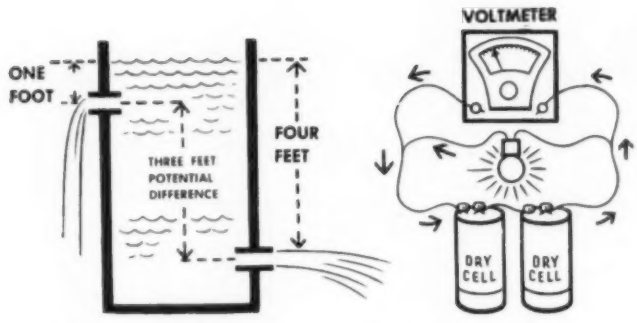
Electrical pressure or voltage is measured in much the same way. In the diagram, two 1.5 volt dry cell batteries are shown connected in series with an incandescent lamp. The voltmeter would show a reading of 3 volts which means that the difference in potential or electrical pressure between the two ends of the lamp circuit is 3 volts. Electromotive force (E.M.F.) (mentioned previously) is the difference in potential which causes a current of electrons to flow in the circuit, giving rise to a continuous current. Thus, the batteries are like the tank of water being slowly emptied to maintain a constant E.M.F. between the lamp terminals.

One *volt* is the electrical pressure or electromotive force required to produce a current of one ampere through a conductor against a resistance of one *ohm*. The ohm, a unit of resistance to current flow, will be discussed shortly.

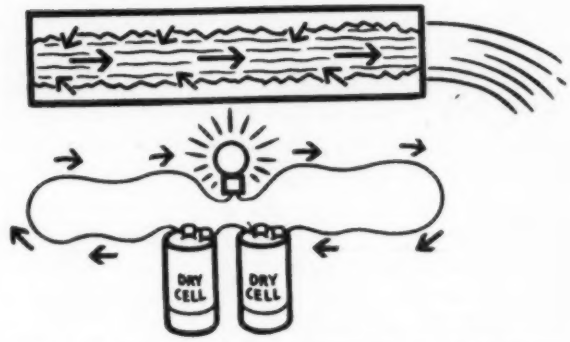
In electrical calibration work it is essential to have a cell of known and constant E.M.F. The Weston Normal "Standard" Cell has been employed as the International Standard for E.M.F.



Alessandro Volta, born 1745, made many contributions to electricity, including Volta's Pile, right, the first battery. The volt, unit of electrical pressure, was named for him.



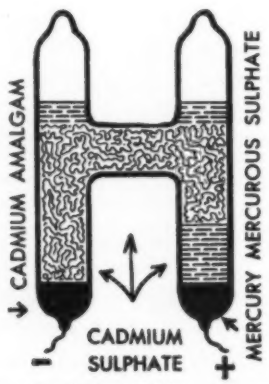
In both the flow of water, left, and the flow of electricity, right, pressure is measured by the difference in potential. The voltmeter measures that there is a three-volt difference in potential between the ends of the lamp circuit.



An electrical conductor has resistance which interferes with the flow of electrons. It may be compared with the friction of the interior of the pipe against the flow of the water.

ratings because of its extraordinary constancy of E.M.F. Its E.M.F. in standard form at 20° Centigrade is 1.0183 volts. Therefore, the legal volt may be defined as $\frac{1}{1.0183}$ of the voltage generated by a Standard Weston Cell.

The first battery was devised by Volta and was called the "Voltaic Pile". It consisted of a pile of alternated discs of silver and zinc, separated by brine soaked cloths. Modern dry cell batteries utilize a similar principle.



The Weston Normal Cell provides a constant and known voltage (1.0183 at 20 degrees Centrigrade) which is used as a standard in measuring the "legal" volt.

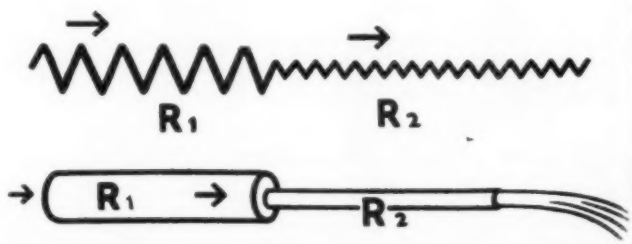
Resistance to Current Flow—The Ohm—Its Measurement

All movement of matter (except a falling body in a perfect vacuum) is opposed by the resisting force of friction. In the water pipe, the interior walls of the pipe resist the flow of water. In an electrical conductor, a resistance opposes the flow of current through the conductor.

The quantity of flow per second (amperes) which can be forced through a conductor is directly proportional to the push it receives (volts), and is inversely proportional to the resistance it encounters (ohms). This is known as Ohm's law and is expressed as $E = IR$, or $I = \frac{E}{R}$ or $R = \frac{E}{I}$ where E equals volts, I equals amperes, and R equals ohms.

In electrical circuits it is frequently necessary to deliberately cut down the flow of current. This is done with resistances or *resistors* as they are often called. Such resistors may be simple coils of fine wire, carbon or graphite rods, or other devices which will satisfactorily reduce the flow of current through the circuit.

When two or more resistors are connected in series (end to end) so that the same current flows through first one and then the other, the total or combined effective resistance of all is equal to the sum of the individual ones. If the water pipe example is used again, it will be seen that the action of electrical resistances in series is like the water resistance in two pipes of different sizes coupled end to end, that is, the total resistance to the water flow is equal to the sum of each pipe's resistance. This might be expressed as $R_t = R_1 + R_2$, etc., when R_t equals the total, R_1 the first resistance, R_2 the second, and so on for any number.



When two or more resistors are connected in series, the total effective resistance will be the sum of the separate resistances.

Also, the voltage or pressure required to push the same amount of current through the series of resistors is equal to the sum of the pressures required to push it through each one of them. In other words, if R_1 requires 50 volts to push 10 amperes through it, and R_2 requires 70 volts to push 10 amperes through it, then both together will require 120 volts. Furthermore, if that much pressure (120 volts) is not available, 10 amperes of current flow will not be able to get through, and Ohm's Law will have to be applied to find out just how much will get through.

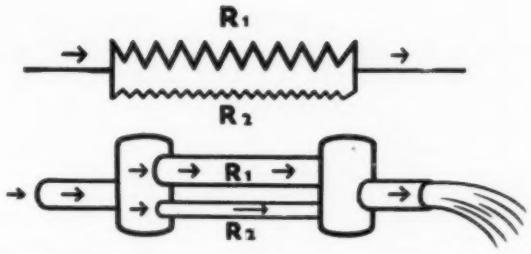
On the other hand, if for instance only 110 volts is available and a current flow of 10 amperes must be obtained for some reason, resistance can be taken out gradually until it is found that the 10 amperes current is getting through. This is the principle of rheostat operation.

To summarize briefly, the current (amperes) in all parts of a series circuit is the same, but the pressure (voltage) required to force a given current through is proportional to the amount of resistance offered.

If resistors are connected in parallel (side by side), the pressure or voltage drop across each one of them is obviously the same regardless of the size of the resistors. However, in this case the total current flow will be equal to the sum of the current flow in each individual resistor. It will also be inversely proportional to the resistance offered by each resistor and can be expressed

$$\frac{1}{R_t} = \frac{1}{R_1} + \frac{1}{R_2} \text{ etc.}$$

With the two water pipes connected in series the resistance to the flow of water is reduced because in this arrangement it passes through two pipes simultaneously instead of first one and then the other as in the case of series connection.



When two or more resistances are connected in parallel, the effect is similar to that shown with the two sizes of water pipes. The flow of both the current and the water is reduced because of the two paths through which they must flow.

Chapter 2

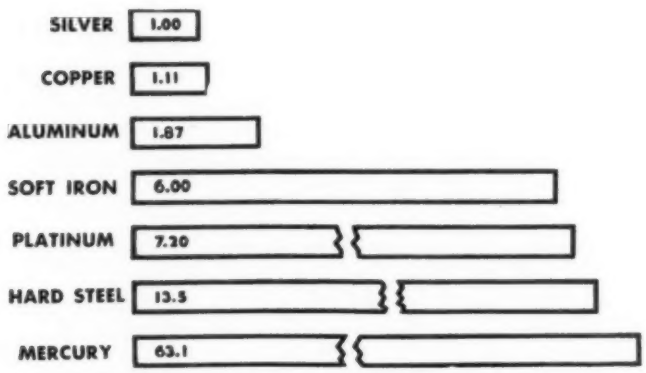
Conductor Characteristics And Resistance

The resistance to the flow of current offered by any conductor is effected by any one or a combination of four principle factors, namely the length of the conductor, its diameter or cross-sectional area, the type of material it is, and its temperature.

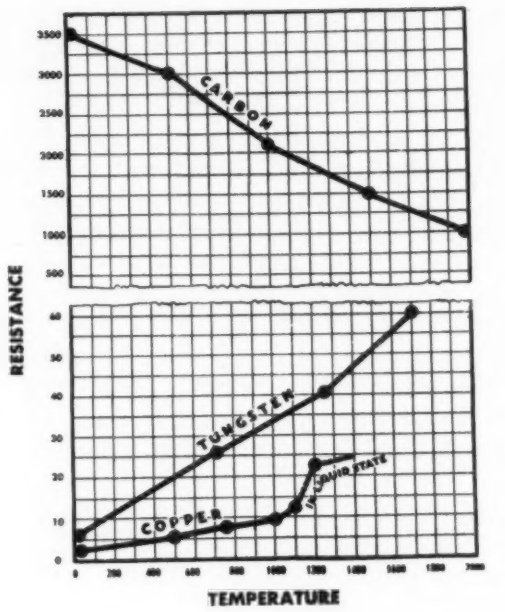
First, the resistance of any given type of conductor varies directly with its length. In other words, the longer the wire the greater its electrical resistance in the same proportion. Second, the resistance of any given type of conductor varies inversely with its cross-sectional area which means that if the cross-sectional area is doubled, its resistance to the flow of current is cut in half because twice as much room is allowed for it to pass along the wire. Third, different materials offer different amounts of resistance. Since silver has the lowest resistance of all metals, it is established as the basis for comparison with all others with a relative resistance of 1. Fourth, when the temperature of a conductor is raised, it speeds up the random movement of the atoms in the conductor. In all pure metals this *increases* the resistance to current flow. In carbon and a few other

The resistance of any given conductor varies directly with the length and inversely with the cross-section area. One unit area, of unit length, as above left, will have twice the resistance of a unit length, two unit areas, as above center, and one half the resistance of a unit area, two unit lengths as above, right. Thus, the larger the wire the less the resistance.

STANDARD WIRE TABLE			
GAUGE	DIAMETER	OHMS PER 1000 FT.	POUNDS PER 1000 FT.
18	.040"	6.39	4.91
20	.032"	10.16	3.09
22	.0253"	16.15	1.94
24	.0201"	25.69	1.22
26	.0159"	40.86	0.77
28	.0126"	64.96	0.48
30	.0100"	103.30	0.30
32	.0079"	164.26	0.19
34	.0063"	261.23	0.12
36	.0050"	415.24	0.08
38	.0039"	660.37	0.05
40	.0031"	1049.7	0.03



The variation of resistance to the size of the wire has been worked out in this table, top chart. The relative electrical resistance of various conductors is shown above.



The resistance of a conductor varies with the temperature of that conductor, as shown in the chart above. The cause is a speeding up in the random movement of the atoms as shown.

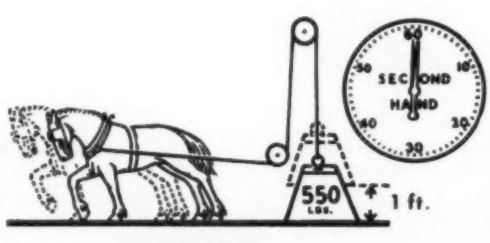
substances, however, the resistance decreases as the temperature rises.

The standard or legal unit of resistance (the ohm) is defined as the resistance at 0° Centigrade of a column of mercury weighing 14.4521 grams, 106.3 centimeters high, with a uniform cross-sectional area of 1 square millimeter.

The Unit of Electric Power—The Watt

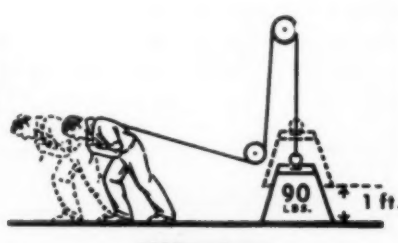
Thus far, none of the units of current flow measurement discussed have covered the capacity of that flow to do work. The ampere is simply a measure of the amount or quantity of current flow, the volt a measure of the pressure behind it, and the ohm a measure of the resistance to flow which must be overcome.

The time rate of a man, a horse, or a machine to do work (overcome resistance) is called power. The average man can lift or raise about 90 pounds a distance of one foot in about one second. This combination of weight, distance and time would be called one manpower. Even if he lifted this weight in two or three peces of 45 or 30 lbs. each, respectively, but lifted them a foot



HORSEPOWER

James Watt, of steam engine fame, first defined horsepower—the moving of 550 pounds to a height of 1 foot in one second.



MANPOWER

It is compared, above, to manpower, the moving of 90 pounds to a height of 1 foot in one second.

each and all in one second, he still would be accomplishing one manpower of work. If he weighed 180 pounds and stepped up four steps, each one foot high, and did it in one second, he would accomplish 8 manpower of work.

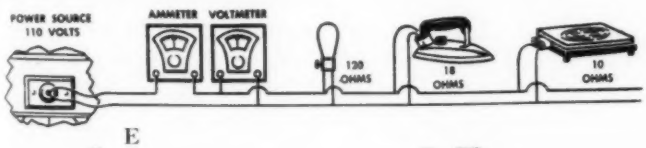
James Watt, a Scotch engineer for whom the "Watt" unit of electric power was named, found by repeated tests and studies, that the average horse can lift 550 pounds at the rate of one foot per second. Watt first evaluated and defined the horsepower while developing the first practical steam engine, and his evaluation that one HP

$$\text{(horsepower)} = \frac{\text{pounds lifted} \times \text{feet per second}}{550}$$

is the basis of mechanical power measurement today.

Electric power, however, is measured somewhat differently. The work that a stream of water can do does not depend entirely upon the size of the stream, or entirely upon the pressure behind it, but rather upon the combination or product of these two factors. Similarly the work done by a flow of current does not depend wholly upon the volume or quantity of that flow, or wholly upon its pressure, but rather upon the product of the two. Thus it can be seen that electric power equals the current in amperes times the pressure (or E.M.F.) in volts. This is expressed as $P = EI$, or Watts (Power = Volts × Amperes.) (For direct current. Alternating current characteristics will be discussed later.)

The watt unit of power measurement is the amount of power required to maintain a current flow of one ampere at a pressure of one volt. Since the watt is a relatively small unit of power, the kilowatt (KW) which is 1000 watts, is used where larger units of power measurement are desirable. The watt-hour or kilowatt-hour (KWH) are units of "power-time" measurement and are used to determine the amount of power used over a period.



$$I = \frac{E}{R} \qquad P = EI$$

$$I_{lamp} = \frac{110}{120} = .916 \text{ ampere} \qquad P_{lamp} = 110 \times .916 = 100.76 \text{ watts}$$

$$I_{iron} = \frac{110}{18} = 6.11 \text{ amperes} \qquad P_{iron} = 110 \times 6.11 = 672.10 \text{ watts}$$

$$I_{grill} = \frac{110}{10} = 11.0 \text{ amperes} \qquad P_{grill} = 110 \times 11.0 = 1210.0 \text{ watts}$$

I = current in amperes R = resistance in ohms
E = electromotive force in volts P = power in watts

Graphic illustration of how to compute power in watts.

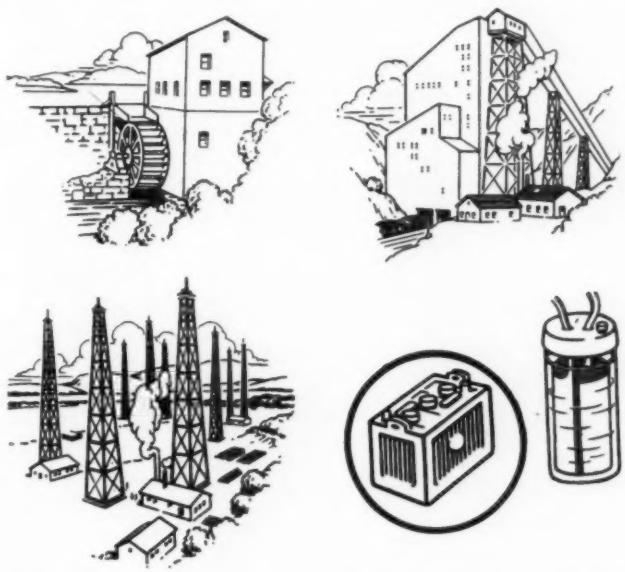
Although horsepower is the unit of mechanical power measurement and watt the unit of electric power measurement, there is a numerical relationship between the two. One horsepower is equal to 746 watts.

Energy—Potential and Kinetic

Since energy is the ability to do work, and since power is the time rate of doing work, it is obvious that there is a relationship between power and energy in that power may also be defined as the time rate of expending energy. Therefore, a brief analysis of energy can be included at this point.

Potential energy is just what its name indicates. It is energy which is stored up and ready for release under the right condition at any time. The storage of water behind a dam is a typical example of potential energy. It is ready to turn the mill wheel and do useful work when the gate is opened.

Coal, oil and natural gas, hidden deep in the earth are also examples of potential energy. Created millions of years ago from vegetable and animal matter under terrific heat and pressure, these three fuels are tremendously important today as sources of power when burned in Diesel engine generators or in the boilers of the great steam turbine power plants.



Potential energy is common in everyday life—the weight of the water above the wheel, the coal from the mines, the oil from the wells. Also, in electricity, the storage battery when "charged" holds potential energy.

The storage battery is another illustration of potential energy. Gaston Plante, the inventor,

found that two plates of lead placed in a dilute solution of sulphuric would become "charged" if connected for a short time to a voltaic cell. Thomas A. Edison spent many years developing and perfecting a slightly different type of storage battery. At present, storage batteries are the heart of automobile ignition systems, and have countless uses in industry and transportation. Today the charging is accomplished with a low voltage direct current generator, and the potential energy stored is in the form of chemical energy.

One other form of potential energy which might be mentioned before leaving the subject is that evidenced in a flat spiral steel spring which is wound tight. In this case the potential energy is the result of displacement of the steel molecules (mentioned earlier). In a relaxed condition the steel molecules are in what might be called a normal relative position. But when the spring is wound, these little particles are forced out of place, and their tendency to return to their original positions supplies the potential energy of a tightened spring.

This example of the wound spring is an ideal place to turn to the consideration of *Kinetic Energy* because while the spring is unwinding, either rapidly or slowly as in a clock, it is a source of kinetic energy.

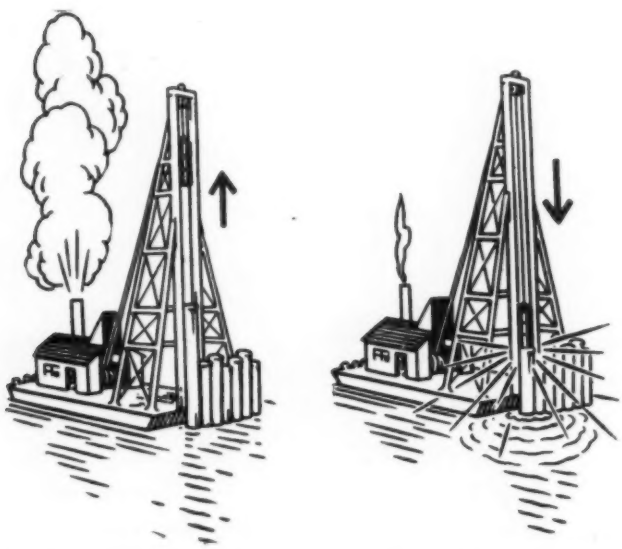
Kinetic energy is energy in motion. In a pile driver, for instance, potential energy is present while the weight is held at the top, but upon release this energy has been transformed from potential to kinetic as the weight falls to drive the pile into the river bottom.

The energy in explosives results from the relative positions of atoms rather than from molecules as in the steel spring. Here the atoms which were in their "normal" positions in the solid form

In its solid or liquid form, an explosive has potential energy. The explosion is a rapid transformation of that potential energy into kinetic energy.

of the explosive are suddenly and violently disarranged when the solid undergoes an abrupt chemical change by becoming a gas. The consequent large increase in volume is what we call the explosion. Thus the potential energy of the solid (or liquid) explosive becomes kinetic energy during a split second, whereas the clock spring may require days to unwind.

As far as is known, or at least within the scope of present average human mental conception, energy like matter can neither be destroyed nor created. This law of the conservation of energy is one of the great scientific generalizations. If it is true that energy can only be changed in form or from one location to another, then there is no more energy in the universe today than there was in the beginning—and no less.



Kinetic energy is energy in motion, as in the pile driver above. The turbine that drives an electric generator imparts the same kind of energy.

TO BE CONTINUED

In September, and in following issues of WHOLESALER'S SALESMAN. For table of contents and chapter summaries see the July 1943 issue.

By Alfred Byers, *Secretary,*
National Electrical Wholesalers Association

News Notes From N.E.W.A.

SURVEY OF APPLIANCE REQUIREMENTS

N.E.W.A.'s Special Committee, under Harold B. Donley as chairman, has completed the field work in connection with its national survey of requirements of electrical home appliances for use by the Electrical Wholesale Distributors Industry Advisory Committee in its deliberations with the War Production Board.

The Association's office prepared and sent out to the entire membership several thousand questionnaires. These questionnaires were given then to selected salesmen who called on their dealer accounts for the purpose of having them fill out and sign them. The cooperation given to this project by members and dealers was excellent.

Returned questionnaires numbered in the thousands. Local dealers, department stores, utilities, house furnishing stores were well represented in the survey. Every state and the District of Columbia contributed data.

Results, as tabulated cannot be reported here because the information is gathered for the specific use of the Electrical Wholesale Distributors Industry Advisory Committee of WPB. The Association, in this instance, acted voluntarily to aid that committee in acquiring first hand knowledge of the appliance situation. For that reason, Mr. Donley's Special Committee has not released that information but rather feels that the survey's results should, and no doubt will, be made public through the Committee of WPB.

POST-WAR PLANNING

Mr. Herbert Metz, chairman of N.E.W.A.'s Post-War Planning Committee, has completed his appointments with Mr. E. B. Ingraham, Times Appliance Co., and Mr. L. E. Latham, E. B. Latham Company, New York, having agreed to serve as the other members of his Committee. Consideration is being given to the appointment of one or more sub-committees for specialized activities but such plan as yet has not materialized.

To date Mr. Metz has held but one meeting, when the groundwork was laid for the Committee's work pattern which assures a most constructive approach to, and practical handling of, this very difficult but immensely important subject.

All members of this Committee know from personal experience the various phases of the electrical wholesalers operations in the handling of both supplies and appliances, and therefore the recommendations coming from this Committee are expected to be both practical and workable.

PACIFIC DIVISION N.E.W.A. HOLDS WAR CONFERENCE

According to word from secretary R. A. Balzari, of N.E.W.A.'s Pacific Division and Mr. D. A. Smith, division chairman, the Santa Barbara War Conference, June 17–19th, 1943 was a real success. Attendance was large and the program was exceptionally good.

Mr. Harry Perl, State Electric Supply Company, Oakland, California was elected division chairman to succeed Mr. D. A. Smith. Mr. C. W. Goodwin, Jr. was elected executive committeeman from the Division.

A complete bulletin of the Conference is now being prepared for distribution to all members of N.E.W.A.

ELECTRONICS COMMITTEE MAKING SURVEY

The Radio and Tubes Committee name has been changed to Electronics Committee. Mr. Percy Stern remains the chairman and the full Committee continues to serve with him.

Recently the Committee sent to Association members a questionnaire intended to develop information as to members present interest in electronic devices and their thinking as to future possibilities in this field.

So much has been heard and read lately about the technical development of electronics, and the place the distributor appears to have or may have in the future picture, that the Electronics Committee believed that N.E.W.A. members themselves must have some experiences or opinions which if collected and summarized would assist the whole membership in making some appraisal of the electronic situation as it may be likely to affect them.

Replies are coming in every day and Mr. Stern soon expects to be able to release to N.E.W.A. members some really useful data.

N.E.W.A'S ROSTER GROWS

Applications for membership still keep arriving at Association headquarters even though Managing Director Pyle and Secretary Byers have been unable lately to spend too much time traveling. On explanation of the continued receipt of application seems to be the Buffalo War Conference of May. Several non-members who attended it have now applied for membership. Another reason is the effective war job being done by N.E.W.A. for the whole industry.

This
NEWSPAPER
advertisement was published in Washington, New York and Chicago by McGraw-Hill, to make friends for business.

When the Stripes are in the Attic . . .
A NEW BATTLE WILL BEGIN

Sound Democracy is Based on Public Understanding

The purpose of this advertisement—and of the messages which have preceded it in newspapers in New York, Chicago, and Washington—is to build a better understanding of the importance of Industrial Progress.

America was built on industrial progress. Victory for our armies would be impossible without our unparalleled industrial strength. Our post-war future will be shaped by it. But to maintain this industrial strength we must have the intelligent cooperation of every citizen.

In a democracy, where all have a voice, all must understand.

Fortunately, we have all the facilities with which to accomplish this educational job. American businesses, large and small, can do their share. Through their local press and other means they can educate the people in their own communities to an understanding of the inescapable fact that we cannot hope to solve our Home Front Problems—now or post-war—unless the productivity of each and every American is increased.

It is our hope that this McGraw-Hill Campaign will contribute to this understanding and provide the "educational yeast" for others, so that every industrial community can receive essential insight into the part that a sound industry can play in assuring good living.

Free newspaper mats of this and other advertisements of the Campaign are available to those businesses who lack facilities for telling their own story in their local press. Space is provided, in these mats, for the signature of the local sponsor.

James H. McGraw, Jr.
President
McGraw-Hill Publishing Company, Inc.

WE were thinking about a soldier named Tim the other day . . . but not in a sticky, sentimental sort of a way.

We were just thinking about the office boy who'll come home a trained technician.

You see, we'll owe Tim a job when he gets back. But how the heck are we going to fit a man who has kept a Flying Fortress in fighting trim back into the minuscule responsibilities of sealing letters and running errands?

Obviously, we've got to figure out a wider scope for a Tim who has learned a great deal, not only about machines, but about people.

And how about the girl who has Tim's old job? She is doing all right. Maybe she will get married and quit work when the war is over . . . but then again?

See how our thoughts were running? Two jobs to provide where only one job existed.

► If you run a business, or a department, you know the next step in our thinking by heart. Multiply Tim by the number of employees that are in the services, or in government jobs, and add the new people that now have their old jobs, and you will see that this nation faces the greatest opportunity in the history of the world.

If we live up to that opportunity, we will not have 10,000,000 unemployed, with their wonderful training going to waste. Instead we will have a country humming with the released energy of its whole people.

[FREE MATS: If you would like to publish this message over your own company name, or distribute it in handy booklet form, write or wire: Research Dept., McGraw-Hill Publishing Co., Inc., 330 West 42nd St., New York (18), N.Y.]

When the Stripes are in the Attic . . . A NEW BATTLE WILL BEGIN (cont'd)

What are we going to do about providing 10,000,000 new jobs when the uniforms are in the attic?

That will be the peacetime battle, and thousands of civilians are now planning its strategy and tactics.

Fortunately, there is a better way to use the energy and skill of our fighters and war workers than putting them on ambition-killing government jobs in some super W. P. A.

American Industry is the best outlet for personal energy and skill.

If you doubt that, remember that our modern industry is little more than 50 years old.

In that short time it has provided more good living for more people than all the centuries and milleniums that went before.

American Industry can give good jobs to every skilled and energetic person who wants to work.

How? By extending the process that produced so much good living for so many in the years gone by.

► If that is true, then everybody should understand how industry works, so that the growth of industry can be encouraged.

The purpose of industry is to get more work done in less time.

The life of industry is improvement.

When products are constantly improved (either in appearance, service or price) more and more people buy them. That makes jobs.

When there is no industrial improvement, you have a country with living standards like those in China, or India.

When there is slow industrial improvement, you have a country like, say, one of the Balkan states.

When there is rapid industrial improvement, you have a country like ours, with the highest living standards in the world.

We haven't always understood this, and so we have had periods when there was little new machinery and improvement in plant. That helps cause depressions.

But, remember that the plants which made electric refrigerators, radios, air conditioning and streamlined trains supplied good jobs during the last depression, because those were *improved* products which people bought in spite of hard times.

► We don't need to worry about creating 10 million new jobs, if we give our nation of Eli Whitneys a chance to do their stuff.

Why do we say "give them a chance"?

Because the only chance industry has to improve is through its Seed Money.

As you know, Seed Money is that part of profit which is "ploughed back" into a business in improved factories, machines, methods and products.

As you also know, a very great amount of Seed Money is being taxed out of existence.

We don't think it makes much sense to stunt the growth of industry at a time when 10 million new jobs will be needed, do you?

If you think Congress should look into this matter of providing better conditions for industrial growth, tell your Congressman how you feel.

"Industrial Progress
is the Source of all Good Living."

THE McGRAW-HILL NETWORK OF INDUSTRIAL COMMUNICATION

24 publications, which gather "war-news" from the "war-production-front" through a staff of more than 153 editors and 725 engineer-correspondents . . . More than 1,500,000 executives, designers, production men and distributors use the editorial and advertising pages of these magazines to exchange ideas on war-production problems.

McGRAW-HILL BOOKS

Publishers of technical, engineering and business books for colleges, schools, and for business and industrial use.

This advertisement is available in handy booklet form. (Less than 100 copies free. Larger quantities, $1.00 per 100; $10.00 per 1000.)

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Business Publishers International Corporation, an affiliate, publishers of Business and Technical Magazines for Latin America, and Overseas Circulation

New Orleans

NEW ORLEANS ASSOCIATION OF COMMERCE

New Orleans
THE PORT OF THE MISSISSIPPI VALLEY

P.O. Box 1460

April 22, 1943

Col. Gordon E. Texter, Dir.,
Facilities Bureau
War Production Board,
Social Security Building,
Washington, D. C.

Dear Colonel Texter:

The war has brought about a tremendous increase in Government business of all kinds, particularly in the fields of construction and supply. The equitable distribution of this business throughout all sections of the United States, to insure the quickest and best deliveries and to preserve the stability of our manufacturers and distributors, is a matter of paramount importance to our national economy.

Over the years, distribution of merchandise from manufacturer to consumer has been handled effectively and expeditiously through the wholesaler and/or jobber, a practice which is the result of many years of experience and seasoned business judgments.

This system of distribution has produced a group of specialists in their respective fields, which because of their experience and the flexibility of their organizations in the aggregate, represent an army of workers whose training and knowledge should be of inestimable value to our country in the present emergency.

The rapid expansion of Government requirements has naturally caused the establishment of large scale governmental purchasing agencies. It stands to reason any policy on the part of these governmental agencies which fails to utilize to the fullest extent the experience and knowledge of the well established local wholesaler and jobber, is not in the best interest of our national welfare, and will cause unnecessary delay and loss of manpower through needless duplication of effort.

Moreover, it is not in the best American tradition to expect the jobbers and wholesalers to perform their services only on occasions when the urgency of the case at hand actually demands the class of service which the jobbers and wholesalers are in a position to render and, on the other hand, by-pass them in instances when the same degree of urgency does not exist.

The wholesalers and jobbers of this country are threatened with extinction unless government agencies, such as the Army, Navy, Maritime Commission and others responsible for the placement of Government orders recognize the situation and undertake to use the services of these important business institutions.

May we urge, therefore, that any future business placed by the War Production Board is handled in such a way that regular trade channels are not disturbed, and that the local distributor, whose success is so important to the proper functioning of his community, in whatever section of the country he may be located, may have the opportunity of contributing his facility to the successful prosecution of the war effort.

Very truly yours,

(Signed)
STURGIS A. SEELYE,
President.

NEW ORLEANS ASSOCIATION OF COMMERCE

NEW ORLEANS
THE PORT OF THE MISSISSIPPI VALLEY

April 22, 1943

Honorable John H. Overton,
United States Senate,
Washington, D. C.

Dear Senator Overton:

As a matter of information, I am attaching copy of letter which has been directed to several Government Departments and Agencies as a result of action by our Board of Directors.

It is important that this effective system of distribution, developed over a long period of years, be maintained in a healthy condition.

The normal activities of wholesalers and jobbers have been greatly curtailed because of inability, due to the war situation, to handle usual volumes of merchandise for civilian use, and it would be extremely unwise if any temporary Government method would put them out of business, thereby hampering distribution in the postwar era, to say nothing of the matter of speeding deliveries of materials of war during the present emergency.

It will be very much appreciated if you will keep this highly important problem in mind so that, as the opportunity arises, you will be in position to use your official influence in helping to preserve the business life of literally thousands of wholesale and jobbing establishments in all lines of endeavor, not only in Louisiana, but throughout the United States.

With kindest regards and best wishes,

Sincerely yours,

(Signed) GEO. E. SCHNEIDER,
General Manager

AN ambitious and well-executed effort by the wholesalers in New Orleans to bring greater recognition to the value of handling all purchases through wholesaling channels, appears to supply a pattern which it is felt other wholesaler groups throughout the country could do well to emulate.

Acting through the New Orleans Association of Commerce (which corresponds to the "Chamber of Commerce" in most cities) the local wholesalers were able to bring to the attention of government procurement agencies, important men in WPB, and purchasing men in the Armed Forces, the soundness of using the established system of distribution through wholesalers and jobbers ". . . to insure the quickest and best deliveries, and to preserve the stability of manufacturers and distributors . . ." And, worded as a resolution of the association, a firm appeal was made for ". . . more complete use of the facilities of the wholesalers and jobbers in the placing of business by the various government agencies . . ."

The program as executed by the New Orleans group, and suggested as a basic formula for other wholesaler organizations to use in cooperation with their local civic boards, consisted of a letter and a resolution which were mailed to the important officials in government procurement, and another letter which was transmitted to the Louisiana senators and representatives in Washington.

The letter outlined the economic soundness of distributing through wholesalers—a system which, the letter read, ". . . has produced a group of specialists in their respective fields, which because of their experience and the flexibility of their organizations in the aggregate, represent an army of workers whose training and knowledge should be of inestimable value to our country in the present emergency."

The resolution was prefaced with

Wholesalers Set Pattern for Other Cities

Enlist cooperation of local Association of Commerce to ask Government, WPB, Army and Navy men, Senators and Congressmen to make fuller use of wholesalers' facilities. Resolution and two letters mailed to impressive list

six paragraphs of facts regarding the economic background of wholesaling, the government expansion which has brought more need for wholesalers' services, and the extent to which the use of wholesaling channels is in the interests of national welfare. It also brought out the threat of economic chaos awaiting many wholesalers if the government agencies utilized wholesalers' services only in emergencies and then by-passed them on less urgent orders.

The other letter asked the cooperation of the Louisiana senators and representatives in using their official influence in helping preserve the business life of hundreds of wholesaling and jobbing establishments, not only in Louisiana, but in the rest of the United States.

It is felt that such a concerted action on the part of these New Orleans wholesalers, working through their local civic business group, has prepared the way for similar public relations work by wholesalers in other cities. Each effort, it is believed, would increase official understanding of the value of the wholesaler to the war program, and at the same time it would tend to combat the theorists who occasionally come forward with their ideas of "eliminating the middleman."

RESOLUTION

ADOPTED AT MEETING APRIL 13, 1943

BOARD OF DIRECTORS

NEW ORLEANS ASSOCIATION OF COMMERCE

****

WHEREAS, the method of distributing through a jobber or wholesaler developed to economically channel manufactured goods from the manufacturer through to the ultimate user is a practice in distribution which is the net result of many years of experience on the part of industry and has been adopted by almost all classes of manufacturers, and

WHEREAS, in the development of this system of distribution there has been produced a large branch of industry which each in their respective fields are specialists of many years' experience in the sphere of their operation; and their organizations in the aggregate represent an army of workers whose training and experience are of inestimable value to our country in the present emergency, and

WHEREAS, with the tremendous and rapid expansion which has necessarily taken place in our Governmental Agencies, it is not to be expected that they would have been able to develop an organization of the same type and character, and

WHEREAS, any policy on the part of the Governmental Agencies which fails to utilize fully the experience and knowledge of the various local distributing organizations as procurement agencies is not for the best interests of our national welfare and causes unnecessary loss of man hours through the needless duplication of effort, and

WHEREAS, it is not equitable to expect the jobbers or wholesalers to perform their services only on occasions when the urgency of the case at hand actually demands the class of service which the jobbers or wholesalers are in a position to render, and on the other hand, by-pass them in instances when the same degree of urgency does not exist, and

WHEREAS, nothing in the foregoing preamble is intended to include instances involving engineering problems or contracts placed on an annual service of supply basis, NOW,

THEREFORE, BE IT RESOLVED, that the Board of Directors of the Association of Commerce appeal for more complete use of the facilities of the wholesalers and jobbers in the placing of business by the various Governmental Agencies and that the above facts be presented to the purchasing agencies of the War Department, the U. S. Army, the U.S. Navy, the U. S. Maritime Commission, other Governmental Agencies which the Board may think advisable, the United States Chamber of Commerce, the Louisiana Delegation in Washington and various trade associations.

YOU CAN GUARANTEE THEM FOR *Longest* SERVICE LIFE..

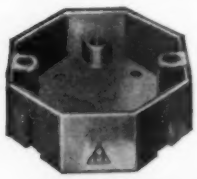
ILLINOIS COMPLETELY INSULATED

ALL PORCELAIN WIRING SYSTEMS

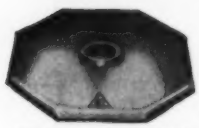
For the customer, porcelain protected wiring systems mean permanency of installation, economy, safety, dependable service where dampness and fire hazards are prevalent.

Illinois all porcelain wiring systems are adaptable to practically all wiring plans and layouts—they are easy to install and can be installed without grounding.

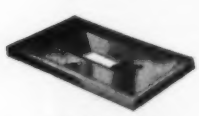
Porcelain is not a critical material—use it for your next installations.

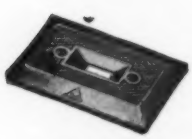


OUTLET BOXES AND COVERS



SWITCH BOXES AND COVERS





TOGGLE SWITCH PLATE

★ SAVES VITAL MATERIALS · DO JOBS IN LESS TIME · CUT MAINTENANCE ★

Bull Dog

Look for this Trade Mark

STANDARD TUBES

STANDARD KNOBS

CLEATS

LAMP HOLDERS

ILLINOIS ELECTRIC PORCELAIN CO.
MACOMB, ILLINOIS

WPB Orders

Copper Sales Under CMP Defined

The procedure to be followed by warehouses and distributors in delivering controlled materials from stock (including consigned Stock) was described in the issuance of CMP Regulation 4 on July 17th. The regulations on copper and copper alloys follows:

"(f.) Delivery of brass mill or wire mill products—(1) Delivery from warehouse stock. (i) A warehouse shall fill authorized controlled material orders for brass mill or wire mill products, in accordance with this regulation, if it can fill the orders from its stock. In addition, until October 1, 1943, a warehouse shall fill from its stock orders for brass mill or wire mill products bearing preference ratings of AA-5 or higher, in accordance with this regulation, except that the total quantity of brass mill and wire mill products shipped on rated orders during the period commencing July 1, 1943, and ending September 30, 1943, must not exceed 2 percent of the total quantity of brass mill or wire mill products, respectively, shipped by the warehouse during the period commencing April 1, 1943, and ending June 30, 1943. In no case, however, may a warehouse fill an order for brass mill or wire mill products unless the purchaser has the right to accept delivery under paragraphs (f) (1) (ii) and (f) (1) (iii), which limit the amount of brass mill and wire mill products which a purchaser may get from a warehouse. A warehouse is entitled to rely on a certificate furnished by any of its customers under paragraph (f) (1) (iv) unless it knows or has reason to believe it to be false. A warehouse shall not fill any order for brass mill or wire mill products except those which it is required to fill by this paragraph (f) (1) (i).

"(ii) No person shall order from warehouse stocks any item of brass mill products for delivery to any one destination, on any one day, which aggregates more than 500 pounds gross weight, or for delivery during any one calendar month, which aggregates more than 2,000 pounds

gross weight, and no person shall accept any such delivery. However, the 500 pound limitation does not apply to a single straight length of rod, tube, pipe, sheet, or strip and neither the 500 pound nor the 2,000 pound limitation applies to condenser tubes.

"(iii) No person shall order from warehouse stock any item of wire mill products for delivery to any one destination, during any one calendar month, which aggregates more than 3,000 pounds copper content and no person shall accept any such delivery.

"(iv) No person shall place an order under this paragraph and no warehouse shall accept an order unless it is accompanied by, or endorsed with, a certificate in the form provided in CMP Regulation No. 7, signed manually or as provided in Priorities Regulation No. 7.

"(2) Other deliveries. A warehouse receiving an authorized controlled material order from a customer and wishing to arrange for direct shipment to such customer by the producer or other supplier thereof, shall, in placing such order, specify direct delivery and shall show on its own purchase order the name of the customer and the allotment number or symbol appearing on the customer's order. A purchase order specifying direct delivery and giving such information shall be deemed an authorized controlled material order. A warehouse placing such an order shall not consider the delivery as made from its stock, and it may not request replacement.

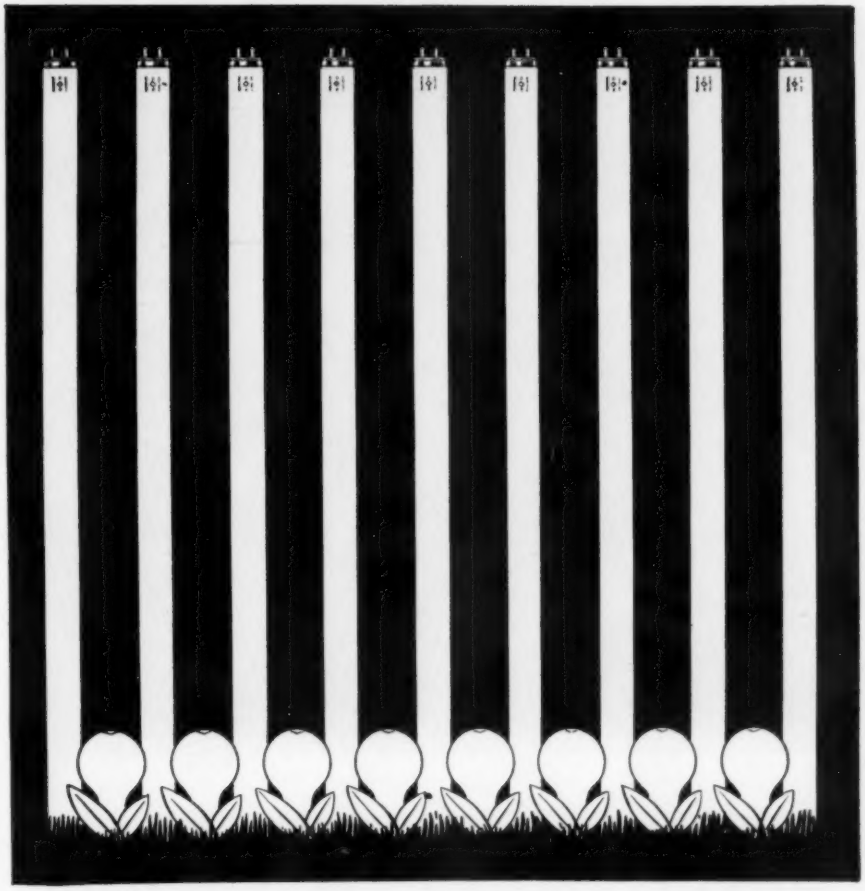
"(3) Delivery after September 30, 1943. No warehouse shall make a delivery after September 30, 1943, of any brass mill or wire mill product except to fill an authorized controlled material order."

Farmers Allocated More Supplies—M-330

Wholesalers as well as manufacturers have been instructed to set aside for sale to farm distribution outlets specific quantities of some 50 hard-to-get items needed on farms.

Further excerpts from the WPB announcement follow:

"The order requires wholesalers who regularly supply farm distribution outlets to set aside out of inventory and future shipments a spe-



Plant a **CHAMPION** *Crop in the Industrial Victory Garden*

Your customers reap immediate and lasting benefit from standardization on CHAMPION Fluorescent and Incandescent Lamps for all replacements.

You are cultivating steady volume and profit year after year when you supply lamps of:

1. **Champion Quality**—guaranteed to equal or exceed Federal Specifications. Backed by specialists since 1900, equipped with every production, testing and development resource.
2. **Champion Responsibility**—the product of one of the largest and soundest manufacturing organizations in the lamp industry.
3. **Champion Service**—stocks for essential needs and trained experts in the field ready to help on any lamp or lighting problem.
4. **Champion Economy**—the *diamond* mark on every lamp means lower light and lamp costs than those of any other lamp of equal quality.

CHAMPION LAMP WORKS
Lynn, Massachusetts
A DIVISION OF CONSOLIDATED ELECTRIC LAMP CO.

COOPERATING IN WAR PRODUCTION

Oliver "BUILT-IN" Quality

MAKES REPEAT ORDERS

more certain!

The ease of installation and long life of Oliver Pole Line materials—the result of "Built-In Quality"—brings repeat orders from satisfied users.

Sound engineering design, the proper selection of materials, precision mass-production methods, highest quality galvanizing are among the factors contributing to greater satisfaction and repeat business for you.

Capitalize on this advantage by telling your customers the facts about Oliver Pole Line Materials!

PROTECTED BY GENUINE HOT-DIP GALVANIZING

OLIVER IRON AND STEEL Corporation

Makers of Pole Line Materials Since 1894

PITTSBURGH, PA.

ALL FOR VICTORY OLIVER

cific percentage of each item on the list. The percentage varies from 6 to 90 percent.

"The list includes such items as auger bits, batteries, chains, chisels, drills, grain scoops, grease guns, harness, hoes, fractional horsepower motors, pails and tubs, pipe fittings, pliers, screw drivers, shovels, tire pumps, valves and wrenches.

"The supplementary order provides that if a wholesaler believes that he will not be able to sell his total reserve to farm distribution outlets within a reasonable time, he may appeal to WPB for relief."

Fuse Order Interpreted

On July 10th, J. Joseph Whelan, recording secretary of the War Production Board issued the following interpretation to paragraph 3008.1 of Limitation Order L-161:

"Paragraph (b) (2) of Order L-161 prohibits the use in the assembly of an electric fuse or a component part of an electric fuse, any copper or copper base alloy, except as a conductor of electric current. Questions have arisen as to whether the following parts of a renewable electric fuse are conductors of electric current:

"(1) A metal exterior threaded end attached to the fibre of a renewable electric fuse tube; and

"(2) A washer used to hold the fuse link in a renewable electric fuse.

"The successful operation of the fuse does not depend on the electric carrying ability of such ends and washers. The metal ends and washers come in contact with the current carrying part of the fuse and have an electrical potential present, but they do not carry or conduct the current. Therefore, the use of copper or copper base alloy in any metal exterior threaded end attached to the fibre of a renewable electric fuse and in a washer used to hold the fuse link of a renewable fuse is prohibited."

Marine MRO Procedure For Foreign Ships

Simplified methods of obtaining maintenance, repair and operating

supplies by ship operators of friendly nations were provided by the CMP Division of the War Production Board in Direction No. 6, issued June 29th.

The certifications, symbols and ratings of CMP Regulation No. 5 may be used to obtain maintenance, repair and operating supplies for such ships. The Direction gave procedures for ships operating under the flags of neutral nations as well as for those operating under flags of the United Nations.

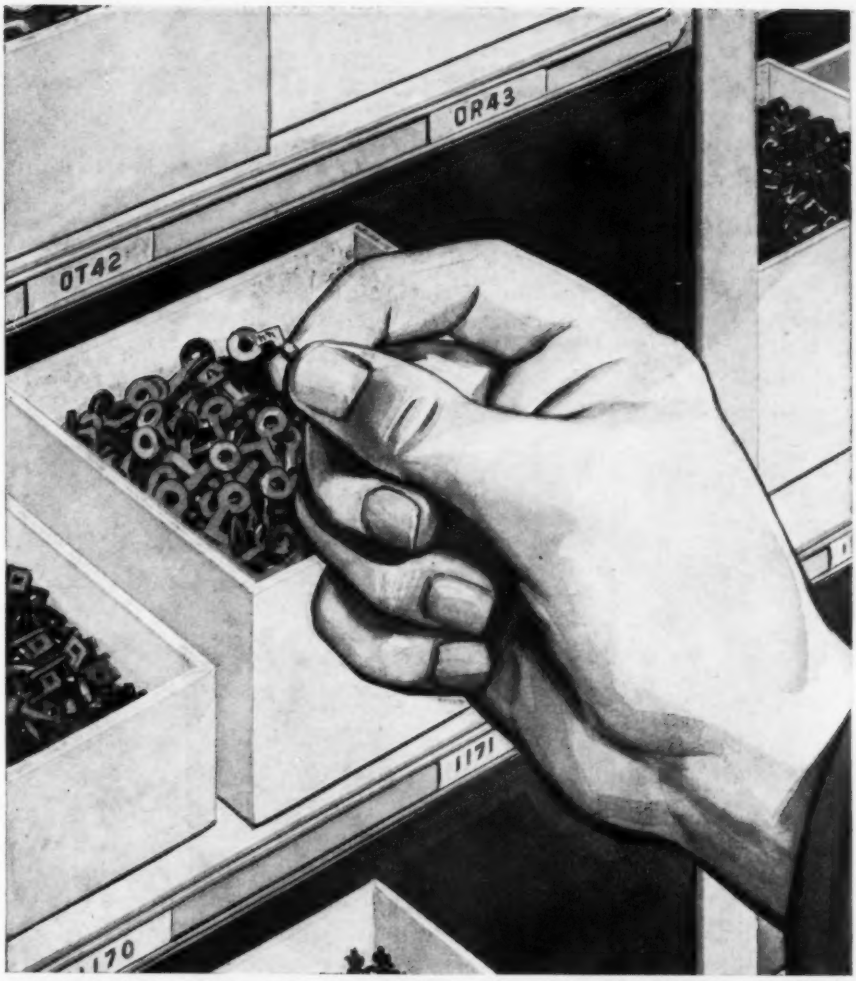
Those persons operating ships under flags of the United Nations may obtain maintenance, repair and operating supplies under CMP No. 5, as though such activity was listed in Schedule I of the Regulation. This means that such ships are eligible to use the symbol MRO to place an authorized controlled materials order, and to use an AA-1 preference rating to obtain other materials for essential maintenance, repair and operating supplies essential for the operation of such ships.

Persons operating ships under the flags of neutral nations, which are not United Nations, may obtain the maintenance, repair and operating supplies which they need under CMP No. 5 as though such activity were listed in Schedule I if, but only if, the purchase order to which the rating and MRO symbol is applied has been countersigned by a representative of the War Shipping Administration.

Quantity limitations imposed by CMP Regulation No. 5 on the use of ratings and symbols do not apply to purchases made for the maintenance, repair and operation of ships eligible under this Direction. However, material for repair of ships in ship repair yards may not be obtained under this Direction, inasmuch as such repair is subject to the Coordinator of Ship Repair and Conversion.

Shipyards now use WPB 617 for Materials

Following an extension of P-14-a and P-14-b until August 1st, Maritime Commission shipyards were placed on Form WPB 617 to get priority assistance in buying materials for the construction of yards and other facilities.

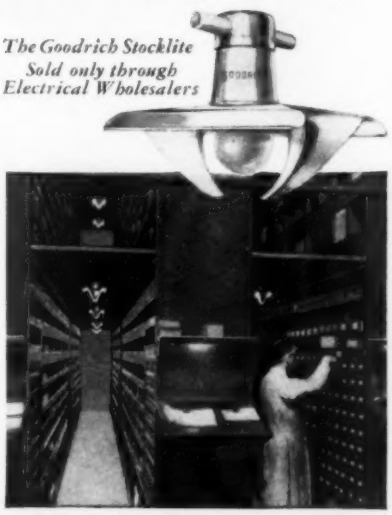


HOW TO MAKE A STOCK BIN FUMBLE-PROOF!

Now is no time for fumbling—for wasting precious minutes when manpower is short—no time for mistakes. Stockroom illumination is below par when "second looks" are needed to read small print or identify parts numbers.

The proved way to faster, more accurate handling is with the fixture designed for the purpose. The Goodrich Stocklite illuminates shelves uniformly from top to bottom row—gets the light into bin interiors where you need it. It enables stock clerks to work faster—to fill orders *right* the first time. And it does it without glare in the aisles to cause eyestrain and fatigue. Write for Bulletin 91.

The Goodrich Stocklite Sold only through Electrical Wholesalers



RLM

GOODRICH ELECTRIC COMPANY
OFFICES IN ALL PRINCIPAL CITIES
GENERAL OFFICES AND FACTORY: 4610 BELLE PLAINE AVENUE, CHICAGO, ILL.

NOW Is the Time for "Protective" Lighting Sales

Steber No. 3200 Closed Type

300
500
750
1000
1500 Watt Lamps

FLOODLIGHTS

Sabotage can cause as much damage to the War effort as enemy bombing. But with Steber "protective" plant property floodlighting, a saboteur is detected immediately by guards in screened locations.

Proper lighting is more necessary today than ever with our increased activities on all fronts requiring greater supplies. Too, better property lighting prevents accidents, facilitates handling materials, and more orderly control of employees going to and from the plant.

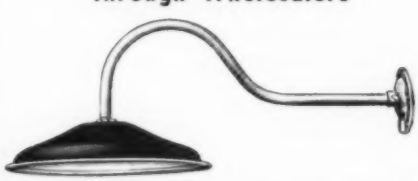
The new Steber floodlights Nos. 3000, 3100, 1600 and 3200 series incorporate many new features,—all available with adjustable light shielding visors. The 1600 or 3200 Lights are furnished in broad, medium, or narrow beam light patterns. More application requirements can be met with fewer sizes.

Now is the time to cover your territory to insure a good Fall volume. Steber policy is simple,—

Ask for

Steber 3000 or 3100 Open Type Floodlights,—available with or without adjustable light shielding visors. Has new easy detachable socket service head for quick installation.

Distributed exclusively through Wholesalers



Never Before So Great a Demand for Farm Lighting

Those who have recognized the great demand for Yardlights, have cashed in—and early Fall and shorter days will increase the possibilities. Steber offers a practical line at quick-selling reasonable prices.

STEBER MANUFACTURING CO.
2451 No. Sacramento Ave. Chicago, Ill.

News

(Continued from page 33)

visory Committee, added "While inquiries about suspected forms may be made directly to the Committee or to the Budget Bureau, businessmen may, if they prefer, write directly to the Federal Agency issuing the form, or instead to their trade association, chamber of commerce, retail organization, professional society, or other organization, which in turn may communicate in confidence with us."

Mr. Donald said also that some particularly burdensome questionnaires, even if they have had Budget Bureau approval, may be made the subject of legitimate inquiry or complaint.

The Advisory Committee is composed of representatives of trade associations, of which the National Association of Electrical Manufacturers is one member. The Committee maintains offices at 1615 H. Street, N.W., Washington, D. C.

Manufacturer Unifies Electronic Activity

In order to promote the use of electronics in industry on a broad engineering and commercial basis, the Westinghouse Electric and Manufacturing Company has established a group of electronic engineers who will guide and direct the company's industrial, electric utility and transportation electronic applications. This new central organization will supplement the company's present electronic divisions with specialized activity such as control, radio, lamps, and power conversion.

Two senior engineers, Gordon F. Jones and Carl J. Madsen, will head the industry engineering group, while Amos J. Germain will be in charge of the industrial department activities.

Kelvinator Launches "Idea Exchange"

The details and operating procedure of a new project designed to broaden the exchange of valuable and timely ideas and suggestions for solving wartime homemaker's problems as they arise, has been made public by the Nash-Kelvinator Corporation.

One thousand dollars in War Bonds will be offered monthly for the best suggestions and ideas on topics which will be announced each month. Four well-known agricultural experts and the OPA's typical American housewife will be the judges.

Drop in Fluorescent Fixture Inventories

According to a recent WPB survey, inventories of non-industrial fluorescent lighting fixtures have declined sharply during the past year. Less than one-fifth of the companies that had fixtures last year still have any, the report showed.

Questionnaires sent to 7000 wholesalers, retailers, manufacturers and assemblers who reported inventories of non-industrial fixtures in June 1942, were returned this year by only 5,600 firms. Of these, 4,600 reported no inventories. The remaining firms reported inventories as of May 28 to consist of 38,234 two and four-lamp fixtures and 16,332 other fixtures.

Members of the Fluorescent Lighting Fixture Industry Advisory Committee, to whom the report was made, discussed possible changes in L-78 to facilitate distribution of existing stocks, which are now released only on rated orders.

All-Time High Electric Output

The highest monthly production of electric energy for public use was recorded in May, according to a report of the FPC. Production of 17,593,-931,000 kilowatt-hours in that month was an increase of 19.3 percent of the same month of 1942.

AT NEWA's Buffalo War Conference recently, this group was photographed at the U. S. Rubber Company's reception. Left to right, J. George Fischer, Saginaw, Mich., J. H. Collier, president and treasurer of the Steelduct Co., Youngstown, Ohio; Jack Isaacs, president City Electric Company, Syracuse, N. Y., H. J. MacDonald, U. S. Rubber Co., New York; Wm. McNaughton, McNaughton-McKay Electric Co., Detroit; N. J. MacDonald, vice-president, Thomas & Betts Co., Elizabeth, N. J.

Latrobe PRODUCTS

★ FLOOR BOXES ★ WIRING SPECIALTIES ★

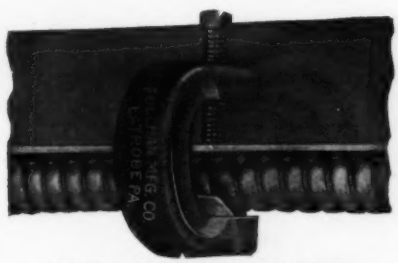
HIGH QUALITY — EASILY INSTALLED

YOU CAN FEEL SAFE WITH THE LATROBE LINE

Latrobe products are practical, wholly free from defects and may be installed quickly without a lot of unnecessary work. Suitable for all types of war emergency and civilian jobs.

NO. 330 OUTLET

This Tom Thumb Utility outlet is convenient for use in wood floors, baseboards, show windows, etc. — Easily installed — Economical.



"BULL DOG" ARMORED CABLE SUPPORT

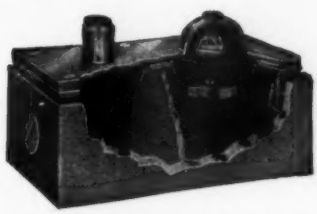
A light, strong clamp that can't be shaken loose. Right for supporting or hanging armored cable to steel framework. Will not crush or deface surface.

NO. 100 BOX

Shown here with No. 206 Nozzle. Fewest number of parts. Least labor to install. No fussy small screws.

NO. 403 INSULATION SUPPORT

With No. 466 Pipe Hanger attached to 2½" conduit.



NO. 252-R FLOOR BOX

This adjustable 2 gang box is shown with No. 208 Receptacle in one section. One cover plate with ½" and one with 2" flush brass plugs.

"BULL DOG" BX CABLE STAPLES

Excellent quality staples packed in cartons, kegs, and barrels. Kegs contain 6,000; barrels, 30,000.

SELL LATROBE PRODUCTS FOR BEST RESULTS

DURABLE — ECONOMICAL

FULLMAN MANUFACTURING CO. — QUALITY AT LATROBE — SUPREMACY — LATROBE, PA.

FULLMAN MANUFACTURING CO.

LATROBE . . . PENNSYLVANIA

From Tube to LUG

BOTH PRODUCED UNDER ONE ROOF

Backed by 75-year experience and the resources of Calumet and Hecla, Wolverine quality is now controlled right from ore straight through to finished product.

BUY WAR BONDS

CALUMET AND HECLA CONSOLIDATED COPPER COMPANY
WOLVERINE TUBE DIVISION
Seamless Copper — Brass
1425 CENTRAL AVENUE DETROIT, MICHIGAN

Buffalo Wholesaler Elects New Officers

At the Buffalo Electric Co., Inc., Buffalo, N. Y., Mr. Karr Parker, president of that wholesaling firm, has announced the election of Charles J. Schwab as a vice-president. Mr. Schwab was formerly apparatus manager and a director of the company.

W. L. Clark was elected a director and treasurer to succeed the late M. J. Diebolt. Succeeding Mr. Schwab as apparatus manager is Mr. R. G. Harper, who was also elected a director. F. I. Sigman, chief engineer, who has been with Buffalo Electric for 25 years, was also appointed a director.

New Advertising Manager at A-S-E

Fred C. Mahnke, Jr., has been appointed advertising manager for the All-Steel-Equipment Co., of Aurora, Ill., manufacturers of steel lockers and office furniture who are now exclusively in war work.

Mr. Mahnke has had extensive background in advertising and editorial work.

Graybar Girls Study Electricity

In order to acquire the technical background in electricity which they now need to supplement "steno' and typing," girls at Graybar Electric Company, Inc., San Francisco, are attending weekly classes in electricity.

Each one of the girls pictured here is doing some of the work of a man

who has been called into the armed forces. At the suggestion of John Scalapino, the service manager, these classes were instituted to give the girls some of the special electrical knowledge they need for their new responsibilities.

Several manufacturers have cooperated by sending men to act as guest lecturers.

Holophane Makes New Appointments

The Holophane Company, New York, has announced important promotions within the company as follows:

Mr. Clarence C. Keller has been appointed sales manager of the company, after holding the position of assistant sales manager since 1934. He is a

Clarence C. Keller

graduate of Ohio State University, a member of the Illuminating Engineering Society, has served on various IES committees, is currently vice-president of the New England Region of IES.

Mr. Davis H. Tuck has been awarded the title of chief electrical engineer. He was previously the electrical engineer.

"In recognition of their services" the following district sales engineers have been appointed district managers in their respective territories: James H. Toohey, Chicago; H. R. Thompson, Cincinnati; E. H. Grieb, Milwaukee; Judd Lough, Atlanta; C. A. Patterson, Oklahoma City; Carl Gershanick, Philadelphia; Jack Parks, Detroit; R. G. Dummel, San Francisco; Frank Van Gilluwe, Los Angeles.

Sylvania Opens New Quarters in Atlanta

A new warehouse and office was opened in Atlanta, Ga., in July by Sylvania Electric Products, Inc. of New York.

Before several hundred distributors and war industrialists in brief opening ceremonies, Don G. Mitchell, vice-president in charge of sales, said that the new plant will be used to help speed deliveries to southern users of Sylvania products. Atlanta becomes the 26th city to acquire a plant of this company.

Aid in today's emergencies

KLEIN'S

This book on the care and safe use of tools will be sent without charge on request.

Communication lines are jammed with vital messages—power lines are carrying greater loads than ever before. To keep lines working in the face of today's emergencies is the job that Public Utilities are ably performing.

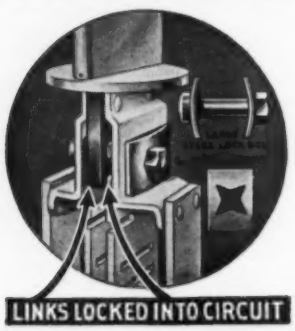
The ability of Klein quality equipment to meet the demands of this unusual service is proving the foresight of those men who demanded the best when purchasing pliers and climbers, safety straps and belts, grips and wrenches.

Of necessity, Klein production today is largely devoted to supplying the needs of the Army and Navy. It is important therefore that every piece of equipment in civilian use be properly cared for to assure it's delivering the long life which is inherent in any product carrying the name KLEIN.

To aid in making tools last longer, give better service, Klein has prepared a booklet, "Long Life to Tools," a copy of which will be mailed to anyone interested.

Mathias KLEIN & Sons
Established 1857 — Chicago, Ill., U.S.A.
3200 BELMONT AVENUE, CHICAGO

WARE HI-LAG



NON-HEATING CONTACTS

Keep Motors Humming

- End Over-Heating
- Stop needless fuse blowing
- Time-Lag 2 to 5 Times Normal Current
- Certified tc Comply—Federal Specification W F 803-a-Type II

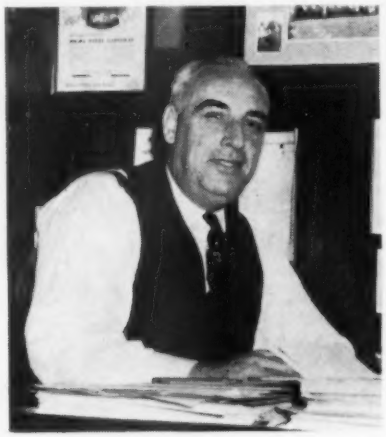
APPROVED BY UNDERWRITERS
Mfgr's Agents Territory Open

WARE BROTHERS
4420 W. Lake St. Chicago, Ill.

WARE
Renewable
HI-LAG FUSES

Three Promoted by West Coast Wholesaler

Phil G. Gough, president of Listenwalter and Gough, Inc., Los Angeles, has made known the appointments of three of his department heads. James S. Addis, formerly sales manager of



James S. Addis

James Hrabetin

the supply department, has been made a vice-president and member of the board of directors. Roy Henry, manager of the credit department, was also elected to the board.

James Hrabetin, a salesman in the supply department, has been made sales manager.

"E" Awards

Among recent recipients of the Army-Navy Production Award in recognition of outstanding performance on war work are: Westinghouse Electric and Manufacturing Co., Mansfield, Ohio; General Electric Co., York, Pa., Revere Copper and Brass, Inc., Baltimore division; the Bristol Company, Waterbury, Connecticut; Borg-Warner Corp., Muskegon Heights, Mich., and the Naval Ordnance Plant operated by Westinghouse in South Louisville, Ky.

Ever Break a Socket?

To Avoid Troubles

hundreds of heavy industrials and shipyards are using our

UICO NO. 63310

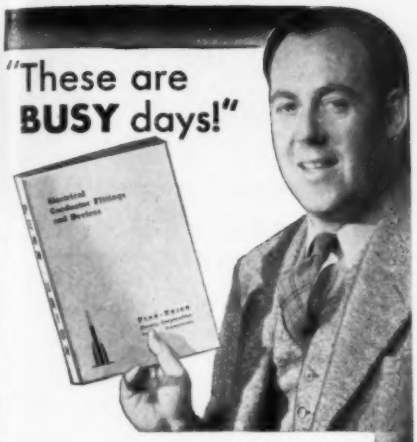
IMPACT RESISTANT BAKELITE SOCKET

This All Canvas Bakelite Socket is built and proven to last three or four times longer than the ordinary socket. Such long-life dependability is especially essential now as it eliminates frequent reordering and re-installing with accompaning priority prcblems and slow deliveries.

• ***Write*** **for details today on No. 63310 Bakelite Socket.**

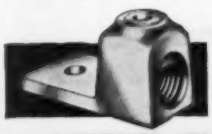
THE ORIGINAL MANUFACTURERS of BAKELITE SOCKETS

UNION INSULATING CO.
Factory: Parkersburg, W. Va.
Sales Office: 27 Park Place
New York City



SAVE TIME—select your conductor fittings from this Catalog . . **ALL** good types

You can buy Tee Connectors, Grounding Clamps, Cable Taps . . . Straight, Parallel, Elbow and Cross Connectors . . . Service Connectors, Bus Supports, Terminals . . . *practically every good type, in the COMPLETE line.*



JUST FOR EXAMPLE— here are some of the standard Penn-Union Vitite terminal lugs:

2-bolt flange

45° flange

Side flange

Center tongue

Round, 45°

Round, 90°

Round, offset

Round, center

These types and many more—in a *complete* range of sizes. Write for Catalog.

Penn-Union connectors are the first choice of leading utilities, industrials, electrical manufacturers and contractors. They have found that *"Penn-Union" on a fitting is their best guarantee of Dependability.*

PENN-UNION ELECTRIC CORPORATION
ERIE, PA. *Sold by Leading Jobbers*

PENN-UNION
Conductor Fittings

Graybar Makes New Appointments

According to an announcement made by A. H. Nicoll, president of Graybar Electric Co., Inc., Charles S. Powell will become manager of the Communications and Merchandising Department at headquarters offices in New York. He will take over his new duties about the middle of August. He is now district manager at Boston.

Mr. Powell's place in Boston will be taken by W. H. MacCrellish, now district manager at Cincinnati. A. D. Hammond, now manager at Birmingham will become district manager at Cincinnati.

Douglas Wallace, now sales manager of the communications and merchandising department at New York, will take over as district manager at Pittsburgh in September. A. R. Loughborough, now district manager at Pittsburgh, will retire at the end of the year following 39 years of service.

Porcelain Products Appoints Olmstead

Harvey M. Olmstead of Denver, Colo., has been appointed representative for Porcelain Products, Inc., of Findlay, Ohio. He will represent that company in Colorado, Wyoming, and New Mexico.

Mr. Olmstead is an electrical engineer with 27 years experience in the industrial and building sales fields. He will replace the late J. Q. Lalor, who was formerly the representative in that territory.

HOBBY of Harry B. Noack, commercial vice-president and supervisor of supply sales at GE Supply, San Francisco, is the breeding and raising of pigeons. He brought a cage with two of his pets to the head table for his talk before the San Francisco Electric Club recently. At the table with him were two friends and local competitors, Edward Duggan of WESCO and Phil Carson of Graybar.

And They'll Want One At Home, Too

Now, Double-purpose Thermador Fan-Type Portable Electric Heaters are providing comfort and convenience in the Army, the Navy and war plants throughout the country.

When Victory is Won, Thermador Heaters will heat cool corners, cool warm areas, dry clothes and hair in the homes of America.

Aggressive dealers are featuring flameless, fumeless Thermador Heaters now to improve working conditions in war plants. Available on priority orders in portable or built-in types for use on 115-volt A. C. service, 1650 watts capacity —or 230-volt A. C. in capacities up to 5000 watts.

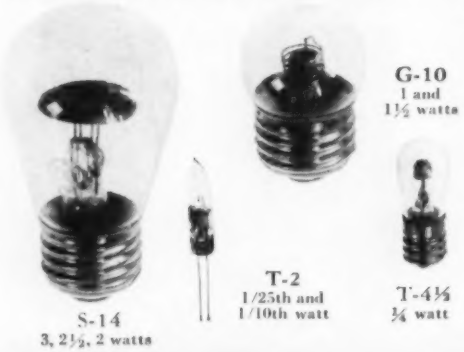
Thermador also manufactures built-in Electric Heaters, Electric Ranges, Electric Water Heaters, and Radio Transformers.

Write today for Catalog WS-6.

THERMADOR
ELECTRICAL MFG. COMPANY
5119 South Riverside Drive
Los Angeles, Calif.
Seven Leagues Ahead

GENERAL ELECTRIC NEON GLOW LAMPS for use as Pilots and Indicators

TYPICAL G-E NEON GLOW LAMPS



GENERAL ELECTRIC Neon Glow Lamps are ideal as pilots and indicators in industrial war plants because they require little power, can operate on standby battery or generator service, and stand up under shock or vibration. They produce a distinctive orange-red light and have a useful life of about 3000 hours.

They are used as pilot lights to show location of switches, sprinkler valves, alarm boxes, emergency doors and exits, and as indicators for fuses and for machines with small quiet motors which may run unnoticed. They may also be used as test lamps for electrical circuits, for synchronizing any two or more moving machines and checking speed. Maybe some vital equipment manufactured by your industrial customers can be made more efficient with the help of glow lamps. For a catalog sheet and full information, write the address below.

NELA SPECIALTY DIVISION, LAMP DEPARTMENT

GENERAL ELECTRIC

410 Eighth St., Hoboken, N. J.

GE Supply Holds Dealer Conference

Retailers of General Electric Supply Corporation's lines in the areas adjacent to Minneapolis were invited to a gathering in that city recently. T. T. Jeffers, service manager of the GE Supply Corp.'s St. Paul branch, was in charge of the meeting which, although lacking in the fanfare of peacetime years, was well-attended by dealers interested in the complex problems of today. Assisting Mr. Jeffers was T. B. Allen, district manager in Minneapolis.

Clint Ring of the refrigeration service department of General Electric Company in Bridgeport, Conn., and A. E. Davis, produce service representative for the Minneapolis Office, spoke to the assembled dealers on refrigerator repair work.

OBITUARIES

John W. McFarland

Tech. Sgt. John W. McFarland, formerly on the staff of the Graybar Electric Co., Chicago, has been reported as lost in action over Germany.

Sgt. McFarland was 24 years old. He had worked in Graybar's sales and service departments before leaving for the service. He is survived by his widow, three sisters and a brother.

A military mass was held on June 20th at St. Bonaventure's Church in Chicago.

R. A. Tellisch

Rudolph A. Tellisch, city sales manager of the Revere Electric Supply Co., Chicago, died recently following a long illness. He was 55 years old.

He was widely known in the electrical field in Chicago. His early career had

been with one of the then large electrical contractors, Freeman-Sweet and Co. Following that he joined the Electric Appliance Company as assistant city sales manager. He left this position in 1919 to join the Revere Electric Supply Company which was then being formed.

"FRIGID"
VENTILATING EQUIPMENT
Circulators, Exhaust Fans, Blowers, Attic and Industrial Fans, Spray Booth Fans, Shutters
FOR THE DURATION WE CAN ACCEPT PRIORITY ORDERS ONLY
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Association News

BALTIMORE—The Electrical Manufacturers Representatives Association of this city decided at a recent meeting to omit its annual summer outing because of transportation difficulties. The funds, ordinarily used to meet any deficit of this affair, have been contributed to the Red Cross for the equipment of one or more recreation rooms, preferably in camps located in Maryland.

KANSAS CITY—Harry E. Moore, secretary of the Electric Association of Kansas City, reports that at a recent meeting of the Electrical Maintenance Engineers of greater Kansas City, Marshall Havenhill, research engineer of the Lighting Institute, K C Power & Light Company, spoke on the subject of Fluorescent Lights—their design, performance and maintenance. He was assisted by Ray Perry and Condry Wilson, industrial engineers of the same company.

MILWAUKEE — The Wisconsin Radio, Refrigeration and Appliance Association sends out an S.O.S. to all dealers asking them to contribute old radio chassis of any kind for use of service men who are taking radio training at Truax Field, Madison, Wisconsin. The Association plans to make all arrangements for collection and delivery of the material.

PHILADELPHIA — The Electrical Association of Philadelphia in cooperation with more than 100 appliance dealers initiates a new wartime plan whereby the public will receive "10¢ A Pound" for old appliances. The dealer in return will receive the much needed electrical parts for his appliance repair business and at the same time vital metals will be salvaged for the government. The Electrical Association will do the advertising for the dealers. The schedule includes a 1,000-line display advertisement in each of Philadelphia's four metropolitan daily newspapers.

The Association mailed over 5000 copies of its booklet "Electrical Maintenance Digest." Listed in this "Digest," under types of equipment, is the name and a brief description of available literature and the address of the local representative of the manufacturer.

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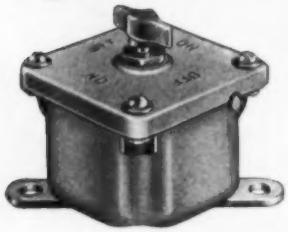

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4719-L FF-S(W.T.)
4719-L GG-S(N.W.T.)
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4777-L V-IS(W.T.)
4816-L FFF-IS(W.T.)
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4873-L GG-S(W.T.)
4914-L MI-S(W.T.)
4923-L IX-S(W.T.)
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9-S FIXTURES

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4341-L IX-S(N.W.T.)
4341-L V-111-A-S (N.W. T.)
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4535-L JR-S(Red,W.T.)
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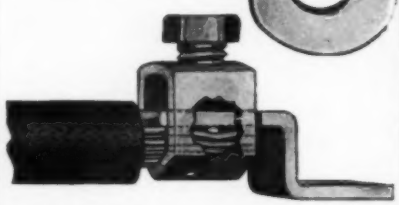

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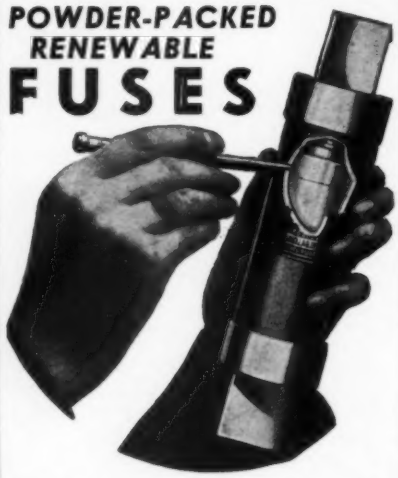

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NEW YORK—The "war effort" and "post-war problems" will constitute the theme of the International Association of Electrical Leagues' Eighth Annual Conference, scheduled for September 16-17. John A. Morrison, Philadelphia, IAEL president, has appointed a Program Committee consisting of: C. H. Christine, St. Louis, chairman; J. S. Bartlett, Washington, D. C., and E. P. Zachman, Cincinnati, Ohio.

Subjects to be discussed the first day will include: appliance and radio repair service plans, contacts with various housing agencies, courses for electricians, dealer counselor service, educational meetings for electrical maintenance engineers, cooperation with civic and trade bodies, and wiring service to home owners.

The program for the second day will deal with several major markets of the industry: residential, commercial, industrial and rural. Under these general headings the following topics will be discussed: How post-war housing construction will be financed, the part that prefabrication will play, new applications for electric service in commercial buildings, advances in lighting technique for stores and offices, and problems of reconversion in industrial plants.

NEW ORLEANS—Secretary R. J. Guidroz of the Electrical Association of New Orleans attended the Edison Electric Institute's Chicago meeting that was held at the Edgewater Hotel. "As an outstanding feature," Guidroz reports, "Chairman H. P. J. Steinmetz, of the 'Sight for Victory' program, told the assembled delegates that it aimed at giving good lighting to the thousands of small plants changed over to war production.

The program is based on a 'Sight for Victory' booklet which has been prepared for personal presentation by lighting men to every industry. The booklet tells a simple story, giving the pertinent facts about lighting for victory."

PORTLAND—From Portland, Oregon, comes word that the Portland Electric Club held its 13th Annual Spring Golf Tournament and stag party at the Columbia Edgewater Country Club. The deadline for teeing off was two o'clock in the afternoon and prizes were given to those who came in with low score. Refreshment time began at 7:30 in the evening followed by more prizes and entertainment.

The officers elected for this year are: Walter W. R. May, president; Jay J. Goodman, 1st vice-president; Stanley Burkholder, 2nd vice-president; A. M. McLean, secretary; W. B. Portouw, treasurer; and J. B. Kilmore, sergeant-at-arms.

MORE FACTS ON PRODUCTS

Arc-Welding—Bulletin GEA-2704C issued by General Electric Company's Welding Division describes the company's arc-welding accessories for men and women operators, illustrates the protective clothing from gloves and sleevelets to complete ensembles, the ventilated helmets and head protectors, observation shields, and electrode holders. It also lists the standard sets of welding accessories and renewal parts for these accessories.

When writing mention WHOLESALER'S SALESMAN

Control Centers—The Trumbull Electric Mfg. Company of Plainville, Conn. has recently issued a circular describing and illustrating its line of control centers, including motor control centers and switchboard control centers.

When writing mention WHOLESALER'S SALESMAN

Drying Lamps—Twelve-page booklet, A-3817, on radiant heat drying lamps manufactured by Westinghouse Electric & Mfg. Co., Bloomfield, N. J., tells what radiant heat is, discusses its advantages, contains illustrations and descriptions of typical installations and includes specific application data.

When writing mention WHOLESALER'S SALESMAN

Fluorescent Fixtures and Accessories—Bulletin F-69 describes the Day-Line unit of the Day-Brite Lighting Co., St. Louis, Mo., that uses the same basic fixture for single unit or continuous installations. Included in the bulletin are illustrations of the various parts, fittings, and accessories used in this type of installation.

When writing mention WHOLESALER'S SALESMAN

Fluorescent Transformer — Four-page folder recently published by the France Mfg. Co., Cleveland, Ohio, describes the "Insta-Start" fluorescent transformer manufactured by this company.

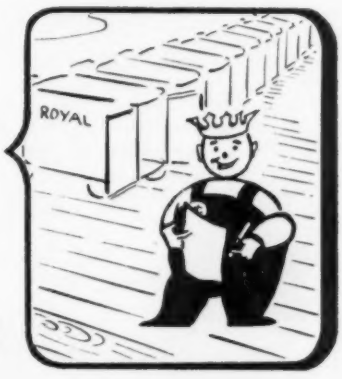
When writing mention WHOLESALER'S SALESMAN

Industrial Switches—Bulletin No. 70 describes the Shutlbrak enclosed switches, type A interlocking and type B non-interlocking, manufactured by Frank Adam Electric Co., St. Louis, Mo. Photographs of actual installations, as well as descriptive data of suggested specifications, are included.

When writing mention WHOLESALER'S SALESMAN

Intercommunicating System — Four-page folder issued by the Operadio Mfg. Co., St. Charles, Ill., describes the company's intercommunicating system used in industrial plants for voice-paging and for broadcasting music.

QUESTIONS ON CORD AND WIRE DELIVERIES?



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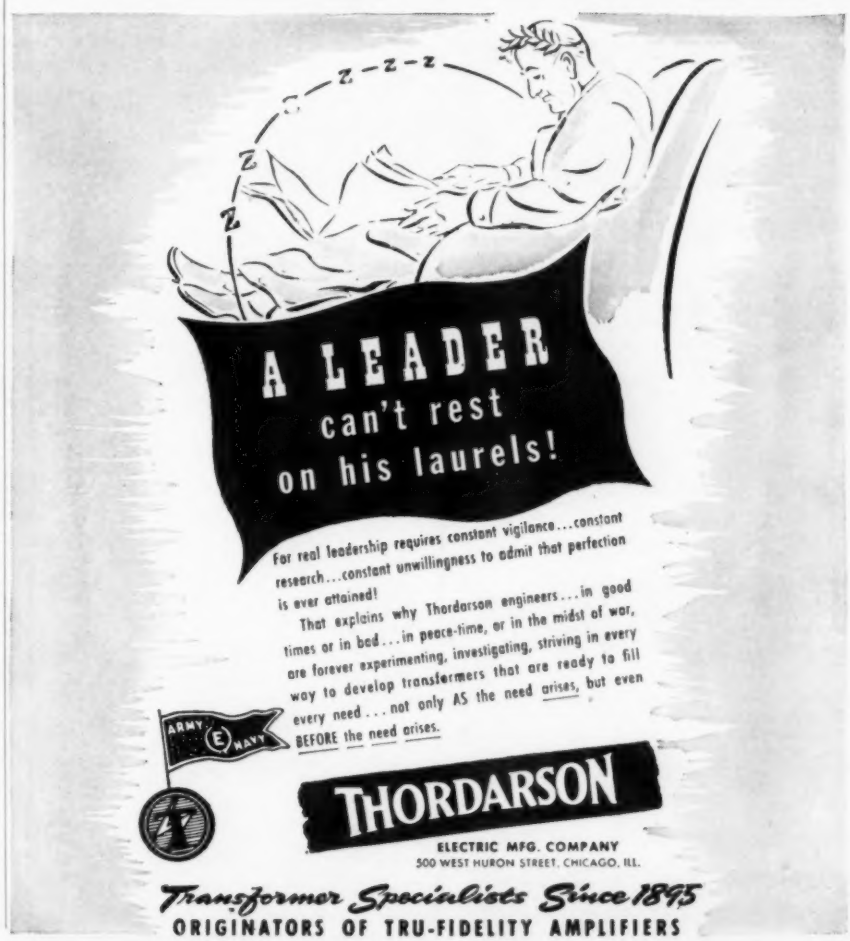
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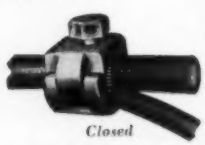

Closed

Cat. Nos. C6-C10—In application, screw is withdrawn to certain point where bottom portion of connector will swivel around so that top portion may be hooked over main wire; swung back into position they are ready for clamping. Maximum wire sizes: Two No. 4—Two No. 2/0.

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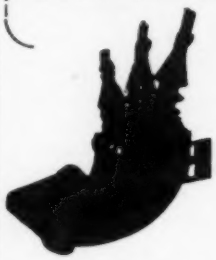

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